ROBINAIR

Service Manual

Models: 347002K/177002K
34900/347012K
Manifold Block Style

Recovery/Recycling/Recharging Unit For R-12 or R-134a Only

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Theory of Operation and Safety Precautions

The 177002K & 177012K recovery, recycling, evacuation and recharging units are designed for R-12 refrigerant only. These units are UL approved and meet SAE J1991 standards.

The 347002K and 34900 recovery, recycling, evacuation and recharging units are designed for R-134A refrigerant only. These units are UL approved and meet SAE J2210 and J2099 standards.

DEPRESSURIZING UNIT

Operational

If you have to remove any lines or components from the high side of unit, do so very carefully as there is no way to recover the refrigerant from the high side of this unit.

1. Disconnect the high and low side service hoses from vehicle, on 134A units' make sure the coupler valves are closed.
2. Open the filter access door and remove the ISV access panel.
3. Close the Liquid and Air Purge valve on the ISV. Do not shut the Vapor Valve. If a source tank is installed on unit close the supply valve.
4. Turn the main power switch on and then start a recover. Allow the unit to pull down and shut off.
5. When the unit shuts off press the menu button then scroll down to tank fill and start this process. Allow the unit to pull down and shut off.
6. When the unit shuts off press the menu button then scroll down to Recycle and start this process. Allow the unit to pull down and shut off.
7. When the unit is done recycling close the vapor valve on the ISV.
8. Connect a recovery unit up to compressor test port.
9. Push the menu button then scroll down until change defaults is displayed, then push 8, 7, 8, 7 and then enter. Scroll down to step test, then push start.
10. Press the start button twice so that the oil return solenoid is energized.
11. Start the second recover unit up and allow it to finish removing the rest of the refrigerant from the low side and the compressor return oil separator of the recovery unit to be repaired.

WARNING

Always wear safety goggles when working with refrigerants. Contact with refrigerant can cause eye injury. Disconnect lines and hoses with extreme caution! Pressurized refrigerant may be present in lines and hoses. Always point lines and hoses away from you and anyone nearby.

Always unplug the station from the power source before removing any of the shrouding or beginning any service work.

To order parts, please FAX your order to 1-800-222-7805.

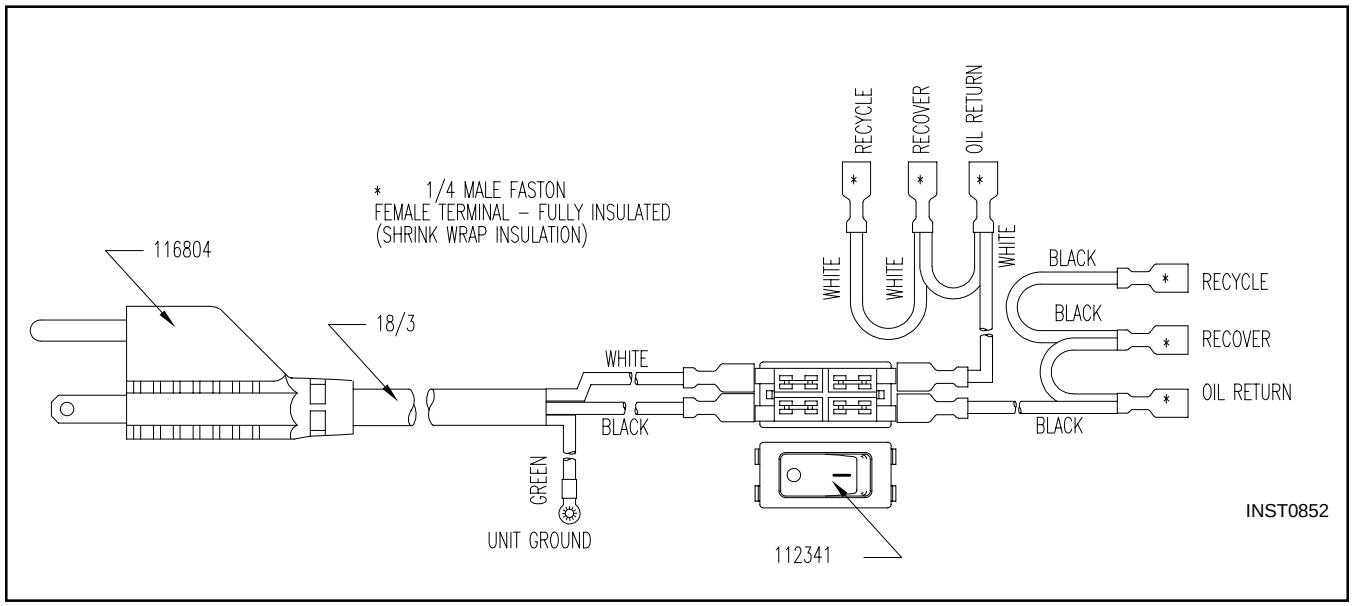
All service related questions should be directed to Robinair Inside Sales and Service at 1-800-822-5561.

Non-operational

If you have to remove any lines or components from the high side of unit, do so very carefully as there is no way to recover the refrigerant from the high side of this unit.

1. Disconnect the high and low side service hoses from vehicle, on 134A units. Make sure the coupler valves are closed.
2. Open the filter access door and remove the ISV access panel.
3. Close the Liquid, Vapor and Air Purge valves on the ISV. If a source tank is installed on unit close the supply valve
4. Disconnect the wires off the Recovery, Recycling and Oil-return Solenoids.
5. Take a cheater cord, with a power switch, and attach it to these three solenoids.
6. Connect an auxiliary recovery unit up to compressor test port.
7. Turn the power switch on the cheater cord to on.
8. Start the auxiliary recovery unit and allow it to pull down and shut off.
9. Turn the power switch on the cheater cord off. Disconnect the cheater cord and reconnect the correct wires to the correct solenoids.
10. Disconnect the auxiliary recovery unit from the compressor test port.

Pictorial View of the Depressurizing Unit



Component Descriptions

110-volt/220-volt

1. **RA19624/RA19766 – MANIFOLD ASSEMBLY**

· **RA19491/RA19492 –** Replacement 110 volt/220 volt coils for all solenoids.

2. **RA19258 – VACUUM SOLENOID. –** Normally closed electrical switch that when energized allow a vacuum to be pulled and the A/C system being serviced

3. **RA19258 – RECOVERY SOLENOID –** Normally closed electrical switch that when energized allow the refrigerant to be removed form the A/C system being serviced.

4. **RA19258 – CHARGE SOLENOID. –** Normally closed electrical switch that when energized allows the A/C system to be refilled with new or recycled refrigerant.

5. **RA19258 – RECYCLE SOLENOID –** Normally closed electrical switch that when energized allows refrigerant to be ran in a loop through the recovery filter.

6. **RA19258 – ADD SOLENOID –** Normally closed electrical switch that when energized allows refrigerant to be moved from the virgin tank of refrigerant to the ISV.

7. **RA19258 – EQUALIZATION SOLENOID –** Normally closed electrical switch that when energized allows the oil in the compressor oil separator to be returned to the compressor.

8. **RA19529 – EXPANSION VALVE -** Controls the flow of refrigerant into the inlet oil separator to keep it from being flooded with refrigerant.

9. **RA18752 – VACUUM SWITCH –** Normally closed switch that opens at 13 in hg and stops the recovery process, recycle and tank fit.

10. **RA19429 – VACUUM PROTECTION SWITCH –** Normally open switch 25+ psi and opens at 10 psi. If the switch is closed it will not allow the vacuum pump to start. This is indicated by a "Pressure Exists, Press Recovery Key" message. Also will stop you from try to recovering an A/C system with a possible leak in it indicated by a "Low System Pressure" message.

11. **RA19427/RA19763 (25-bar TUV approved) – HIGH PRESSURE SWITCH –** Normally closed between connections 1 & 3 during normal operations. When the pressure reaches 435 psi +/- 10 psi the switch will then close the connections.

12. **RECOVERY CHECK VALVE –** Stops refrigerant from flowing back out the unit after a recovery is completed and during the vacuum recycle process.

13. **34724 – RECOVERY FILTER –** Removes moisture from the refrigerant being recovered from the A/C system.

14. **INLET OIL SEPARATOR –** Removes the oil out of the refrigerant being recovered from the A/C system.

15. **COMPRESSOR OIL SEPARATOR –** Removes the compressor oil from the refrigerant that is leaving the compressor.

16. **RA19743/RA19595 – R134A, AIR PURGE –** Removes excessive air from the recovery tank.

· **RA19744/RA19770 – R12 AIR PURGE –** Removes excessive air from the recovery tank.

17. **RA19596 – TRANSFORMER –** Takes line voltage and steps it down to 12 volts.

18. **RA17282/RA17324 – RELAY –** Electrically controlled switch that when energized will start either the compressor or the vacuum pump depending on which on it energized.

19. **RA19612/RA19764 (350 PSI Relief) – ISV –** Storage vessel that the recovered and recycled refrigerant is stored.

20. **RA19593 – SCALE 34900 –** Electronic strain gauge that sends a signal up to the circuit board to display the amount of weight in the tank.

21. **RA17416/RA17516 – FAN –** Cool the compressor electrical components so that it does not shut don on thermal overload.

22. **RA19458/RA19762 – COMPRESSOR –** Moves the refrigerant from the A/C system being serviced to the storage tank on the unit.

23. **RA17419 – OIL BOTTLE –** Catches the used oil during the oil drain, or holds the new oil to be injected into the A/C system being serviced.

24. **RA19524 –** WHEEL

Component Descriptions

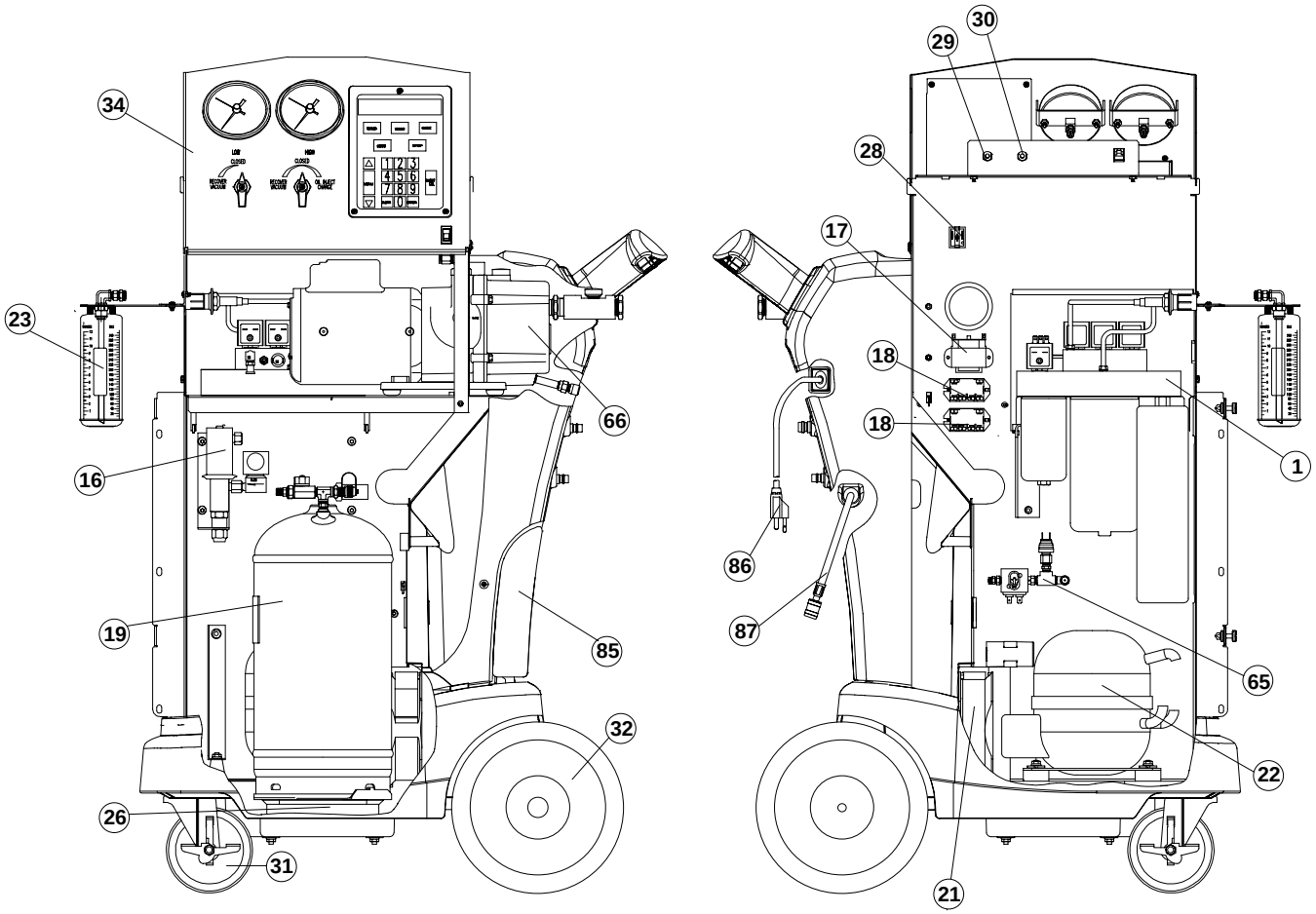
25. **RA19056 – TANK STRAP –** Secures virgin tank to unit.
26. **RA19603 – SCALE –** Electronic strain gauge that sends a signal up to the circuit board to display the amount of weight in the tank.
27. **RA19181 – IEC RECEPTACLE –** Power cord plugs into this and supplies power to the main power switch.
28. **RA19047 – RECEPTACLE –** Supplies power to the vacuum pump.
29. **RA17549 (15-AMP)/RA9759 (7.5-AMP) CIRCUIT BREAKER –** Protects unit from drawing too much amperage and shorting electrical components out.
30. **RA17548 (3-AMP)/RA19760 (1.5-AMP) CIRCUIT BREAKER –** Protects the power transformer.
31. **RA19631 –** CASTER
32. **19676 – PNEUMATIC WHEEL**
33. **RA15425/15630 – VACUUM PUMP–** Two stage 6 cfm rotary pump designed to pull moisture and air from an A/C system
34. **347002k/177002k CONTROL PANEL ASSEMBLY –** Contains the components for the user to operate the unit.
35. **RA19613 (R134a) / RA19742 (R12) – LOW SIDE GAUGE –** Allows the user to monitor pressure on the low side of the A/C system being serviced.
36. **RA19614 (R134a) / RA19742 (R12) – HIGH SIDE GAUGE –** Allows the user to monitor pressure on the high side of the A/C system being serviced.
37. **RA19343 – MAIN POWER SWITCH –** Controls power to the circuit board, relays and transformer.
38. **RA19739 – CIRCUIT BOARD –** Controls the operations of the unit.
39. **RA19675 – 34700 KEYPAD –** Allows the user to input what process they want the unit to operate in.
40. **122926 – CONTROL PANEL – VALVE MAINFOLD –** Controls the flow from the A/C system being serviced to the recovery unit.
41. **34900 CONTROL PANEL ASSEMBLY –** Contains the components for the user to operate the unit.
42. **RA19392 (34900) – LOW SIDE GAUGE –** Allows the user to monitor pressure on the low side of the A/C system being serviced
43. **RA19393 (34900) – HIGH SIDE GAUGE –** Allows the user to monitor pressure on the high side of the A/C system being serviced.
44. **RA19626 – 34900 KEYPAD –** Allows the user to input what process they want the unit to operate in.
45. **RA19672 – OIL DRAIN SWITCH –** Used during the automatic oil drain process, works off of pressure, allows the pressure in the accum/oil separator to build up to16-psi then drain down to 9-psi. When installing this switch in a 34900 remove the ¼ flare fitting from the "T" then installs the switch.
46. **121771 – PNEUMATIC FITTING**
47. **111161 – ELBOW**
48. **121312 – .042 ORIFICE**
49. **RA19297 – OIL DRAIN SWITCH –** Controls the oil drain process after recovery.
50. **111858 –** 1/8X1/8X1/8 MP "T"
51. **121152 – MALE QUICK CONNECT**
52. **121153 – FEMALE QUICK CONNECT**
53. **110646 – LOCK WASHER**
54. **121449 – CAP**
55. **117663 – 5/16 TUBE CUT TO LENGTH**
56. **120225 – ¼" OD TUBE 3' (36")**
57. **120225 – ¼' OD TUBE 1.33' (16")**
58. **120225 – ¼" OD TUBE 1' (12")**
59. **112699 – O-RING**
60. **RA19006/RA19088 – SOLENOID/RA19258 REBUILD KIT –** Normally closed electrical valve that opens when the circuit board send voltage to it.
61. **RA19282 – CHECK VALVE –** Stop refrigerant from reentering the A/C system after recovery.
62. **17155 – OIL DRAIN BOTTLE W/FEMALE QUICK CONNECT FITTINGS**
63. **17165 – OIL DRAIN BOTTLE W/FEMALE & MALE**

Component Descriptions

QUICK CONNECT FITTINGS

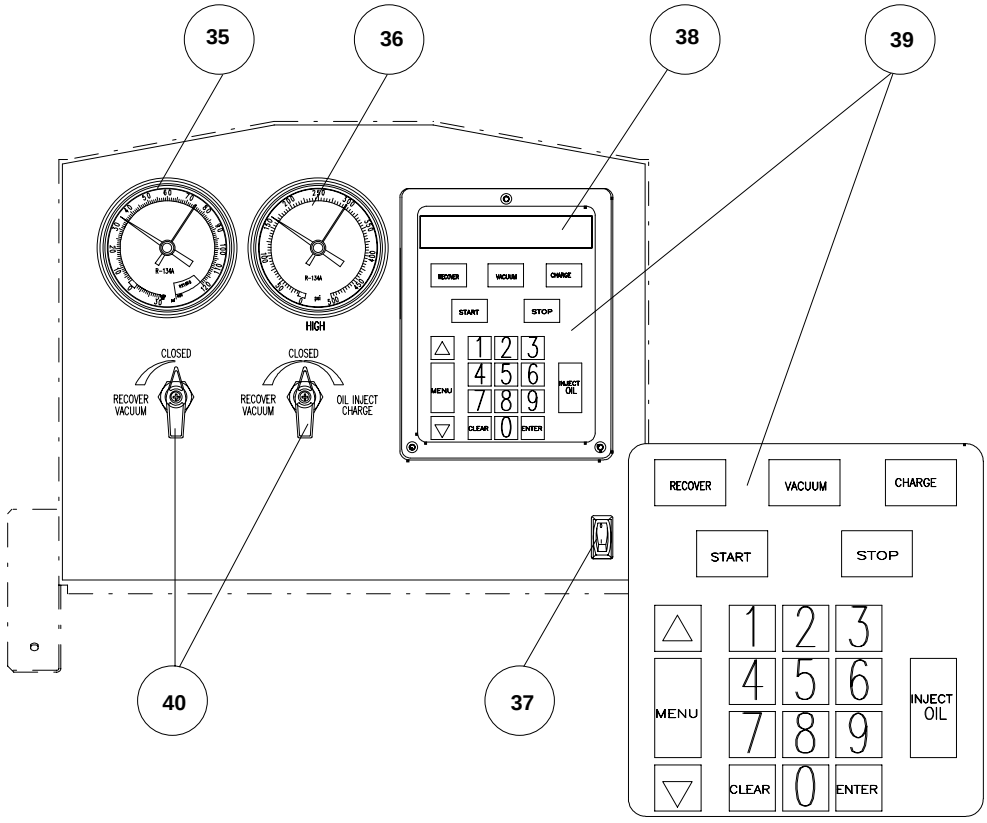
64. **OIL INJECTION ASSEMBLY –** Allows the refrigeration systems oil to be replenished.
65. **OIL DRAIN ASSEMBLY –** Drains oil from the inlet oil separator after recovery process is complete.
66. **122850 – VACUUM PUMP –** Two stage 6 cfm rotary pump designed to pull moisture and air from an A/C system.
67. **116454 – INLET COUPLING**
68. **116274 – O-RING**
69. **122912 – PNEUMATIC FITTING**
70. **122899– SOLENOID –** Allows the pump to open up to the atmosphere after the evacuation process.
71. **112870 – ELBOW**
72. **110392 - ADAPTER**
73. **121784 – PNEUM. COMPRESS. ELBOW**
74. **122746 – ADAPTER**
75. **110956 – O-RING**
76. **15731 – FILLER CAP & O-RING**
77. **122222 – ADAPTER**
78. **122221 – SIGHT GLASS EXTENSION**
79. **117680 – SIGHT GLASS**
80. **122317 – O-RING BUNA –N-**
81. **111098 – FLARE CAP**
82. **100733 – HALF UNION COUPLING**
83. **112835 – NIPPLE**
84. **122134 – R134A AIR PURGE/122435 – R12 AIR PURGE –** Removes excessive air from the recovery tank.
85. **121588 – OIL DRAIN BOTTLE**
86. **122770 – POWER CORD**
87. **121961 – FILL HOSE –** Hose used to transfer virgin refrigerant into the ISV.
88. **121346 – DOOR BRACKET**
89. **121376 – DOOR**
90. **120867 – TOP**
91. **113160 – CASTER**
92. **112776 – 3 AMP FUSE –** Protects the power transformer.
93. **121341 – TANK FILL HOSE –** Hose used to transfer virgin refrigerant into the ISV.
94. **RA19739 – CIRCUIT BOARD –** Controls the operations of the unit.
95. **68296A – R12 LOW SIDE HOSE –** Low side service hose to the vehicle.
96. **68396A – R12 HIGH SIDE HOSE –** High side service hose to the vehicle.
97. **40083 – GASKET (PACK OF 6) –** Replaced the gasket on the non quick seal end of service hose.
98. **18451 – QUICK SEAL REPAIR KIT –** Repairs the quick seal end of hose.
99. **10237A – AUTO ADAPTER KIT –** Allows access to the R12 air-conditioning system.
100. **62096 – R134A LOW SIDE HOSE –** Provides flow from the low side coupler to the low side port.
101. **18190A – LOW SIDE SERVICE COUPLER –** Allow access to the low side of the of the 134A system.
102. **63096 – R134A HIGH SIDE HOSE –** Provides flow from the high side coupler to the high side port.
103. **18191A – HIGH SHIDE SERVICE COUPLER –** Allows access to the high side of the 134A system.
104. **19115 REPLACEMENT O-RING FOR HIGH & LOW SIDE SERVICE COUPLERS (front o-ring)**
105. **17772 – REPLACEMT O-RING BETWEEN THE SERVICE COUPLER AND THE 14MM BARB**
106. **40302 ACME QUICK SEAL REPAIR KIT–** Repairs the quick seal end of hose.
107. **RA19504 – CHECK VALVE –** Stops oil from entering into the recovery system during oil-injection.
108. **113025 – CHECK VALVE –** Stops refrigerant from entering into the oil-injection bottle during the charging and recovery process
109. **122917 – Pneumatic Connector**
110. **119983 – Coupling**

347002K / 177002K
Component Location



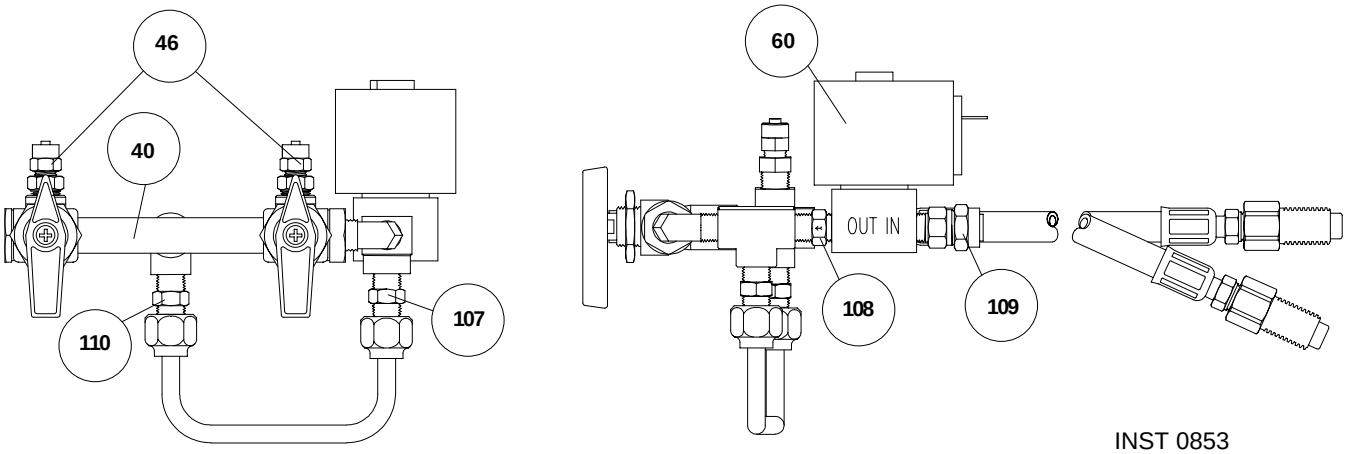
INST 0837

34 Control Panel 347002K / 177002K



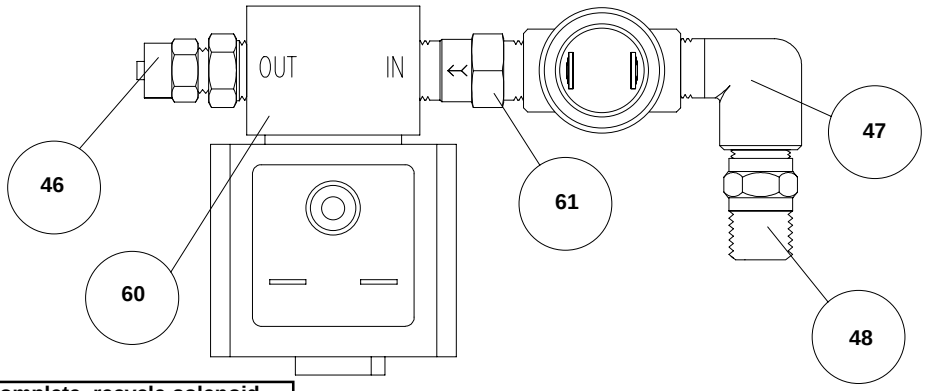
INST 0698

40 Inlet Manifold

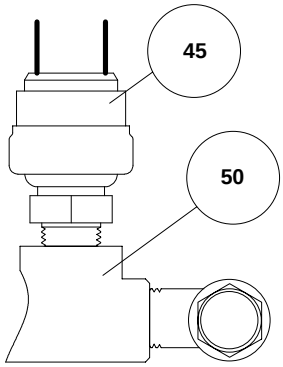


INST 0853

65 Oil Drain Assembly

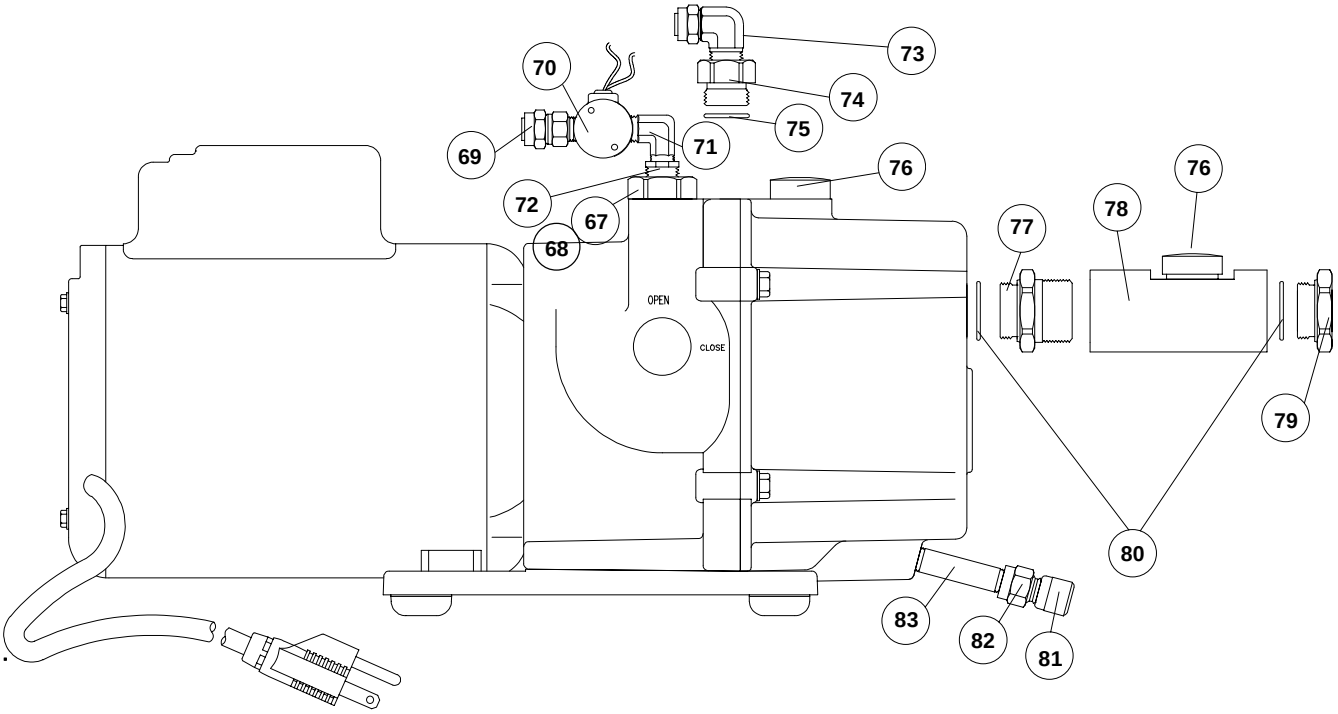


When Recovery is complete, recycle solenoid opens and allows the accumulator to fill to 16-psi. (This is controlled by the oil drain pressure switch.) When the switch reads 16-psi, it will open the oil drain solenoid and allow the oil to drain. When the switch reads a pressure of a 9-psi for 3 seconds it will shut the oil drain solenoid and now the recovery process is complete. If auto restat is on, the unit will tehn do a cl-l. after this is completed the recovery solenoid opens for 5 minutes and monitors the vacuum switch, looking for a positive pressure. If pressure is detected unit will recover this pressure, then moniter the pressure for another 2 minutes. The unit will repeate this process unitll there is no longer a pressure rise.

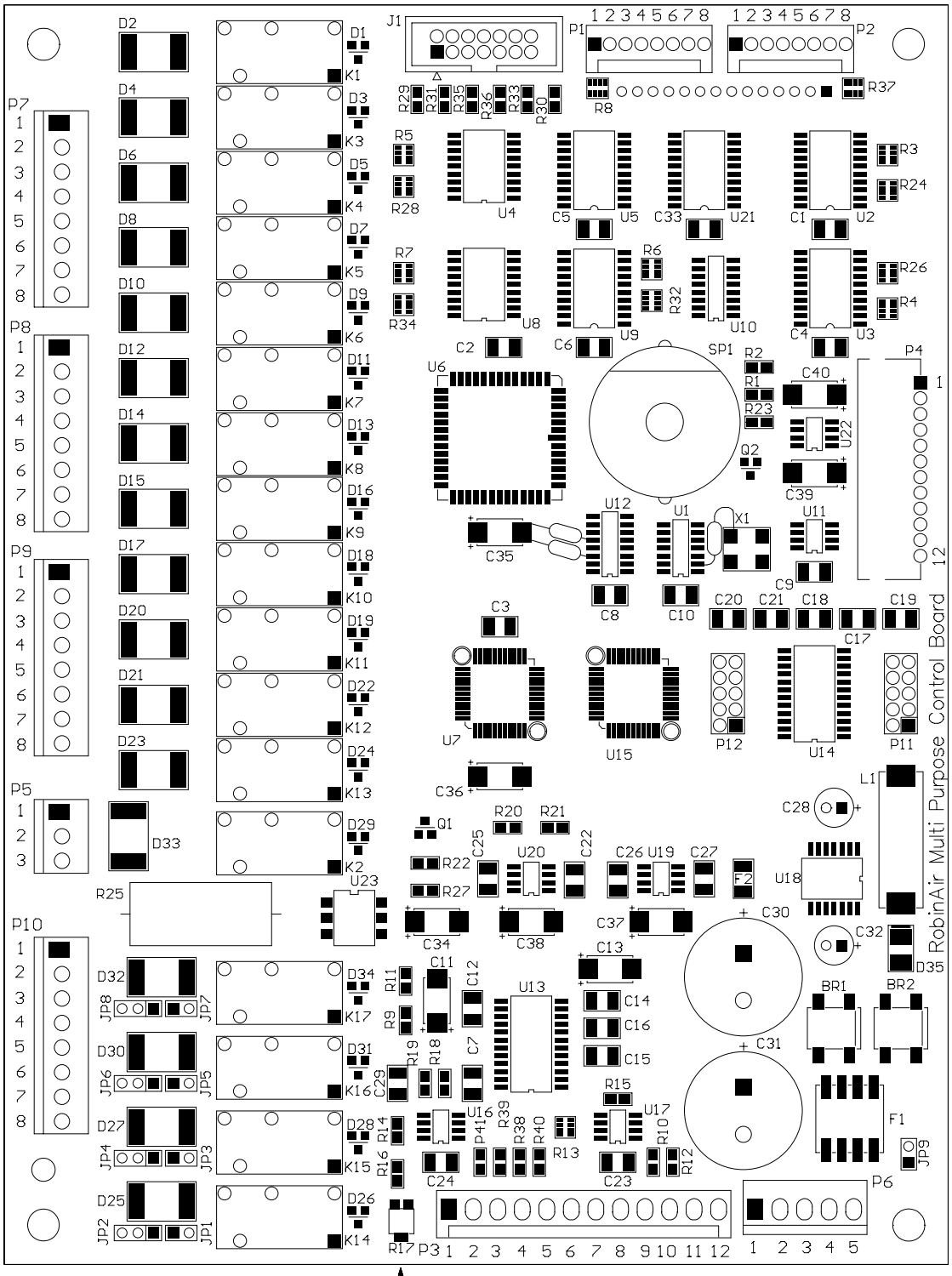


INST 0838

66 Vacuum Pump 347002K / 177002K

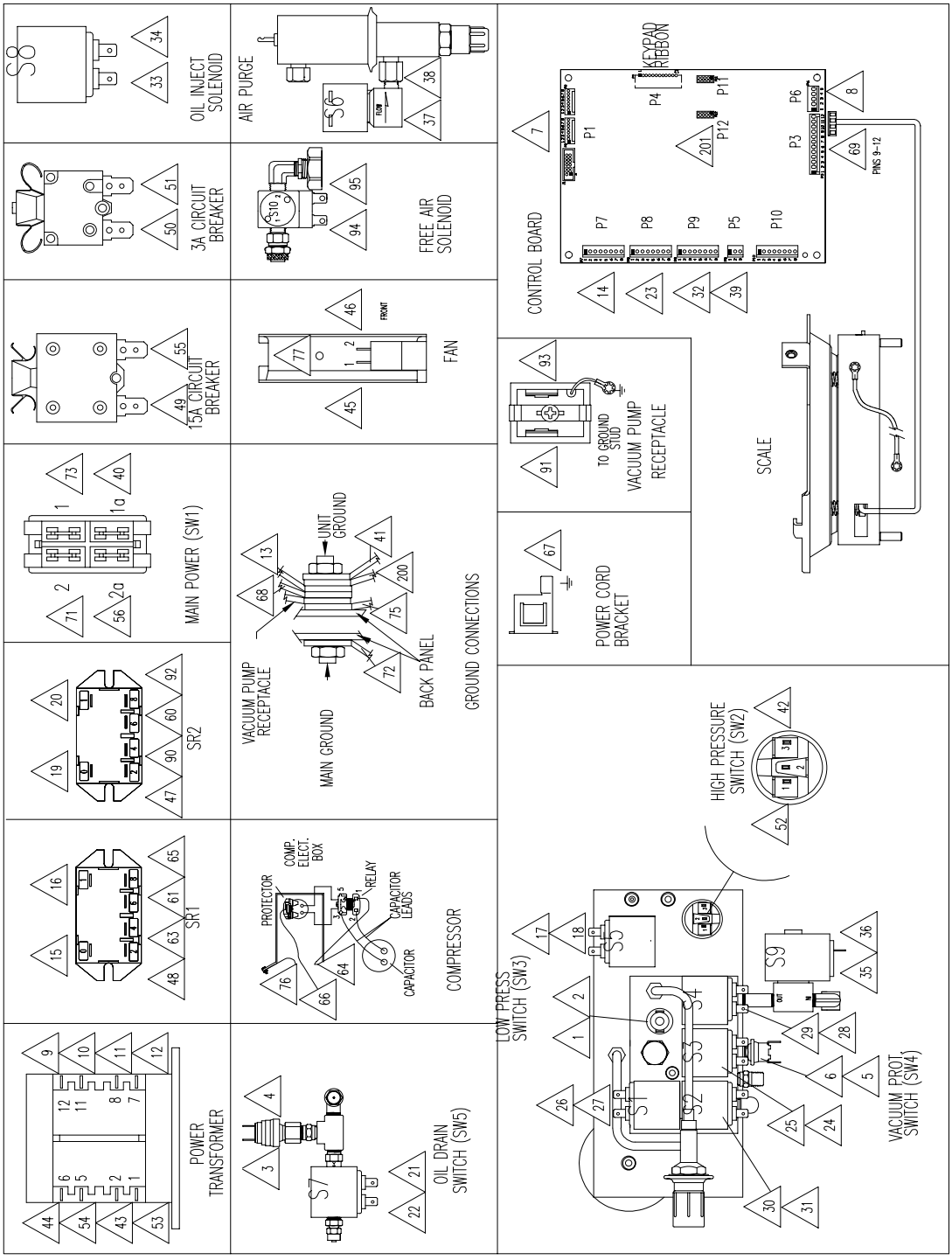


347002K Circuit Board
RA19739



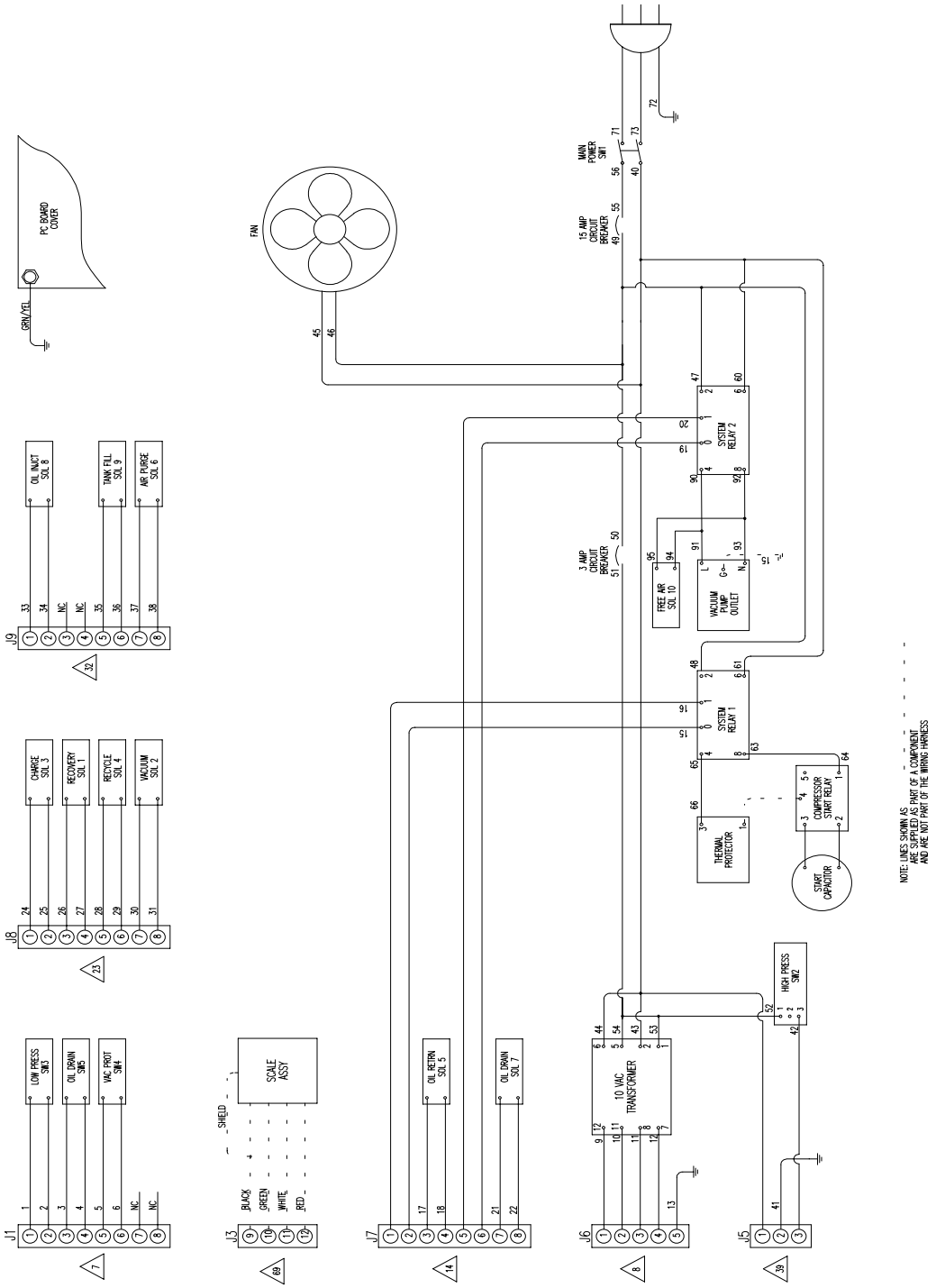
INST 0720

347002K / 177002K
Wire Diagram



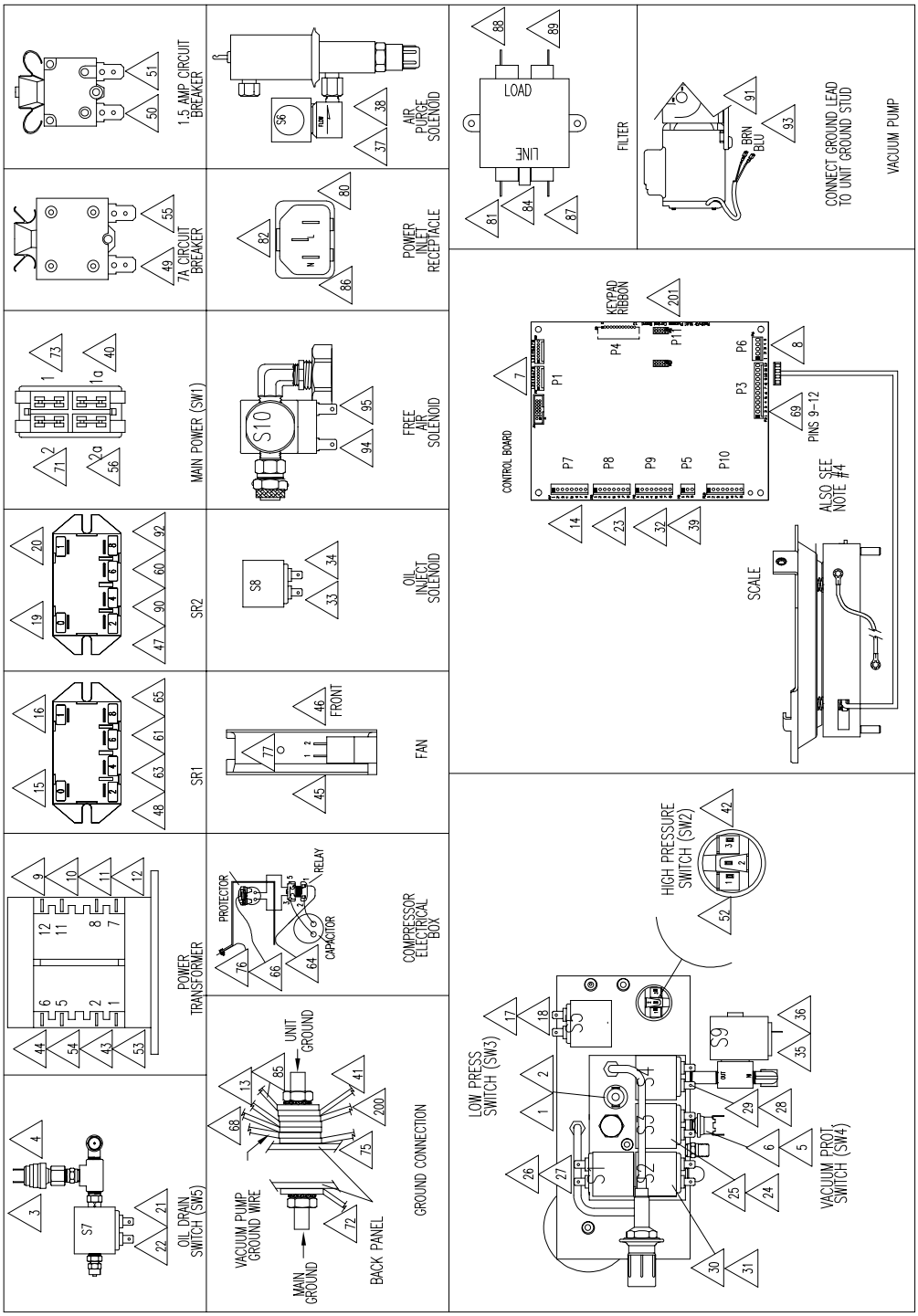
INST 0840

Wiring Diagram 100V-110V
347002K / 177002K



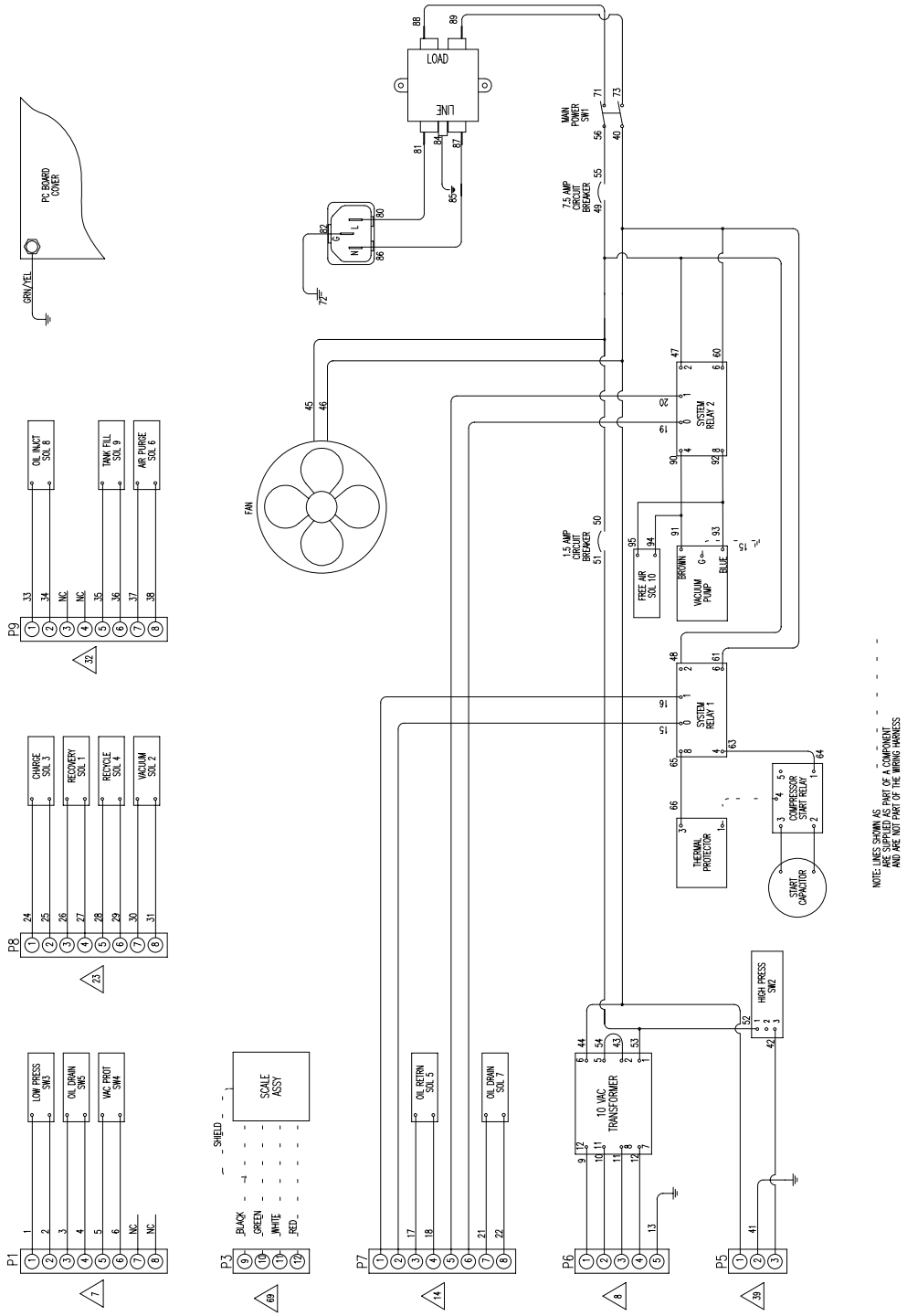
INST 0702

220 Volt / 347012K



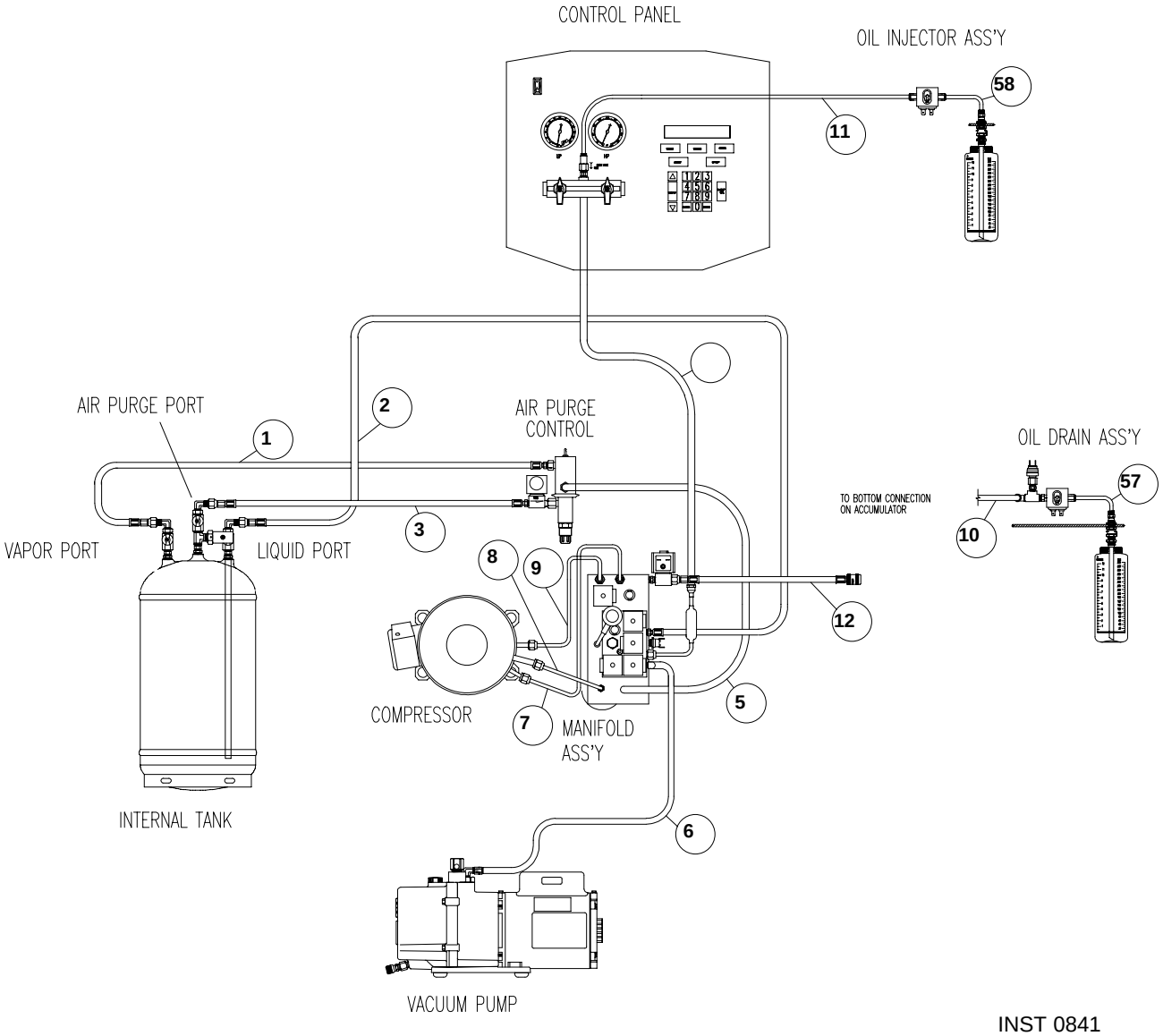
INST 0848

220 Volt / 347012K



INST 0849

Plumbing Diagram
347002K / 177002K / 34900

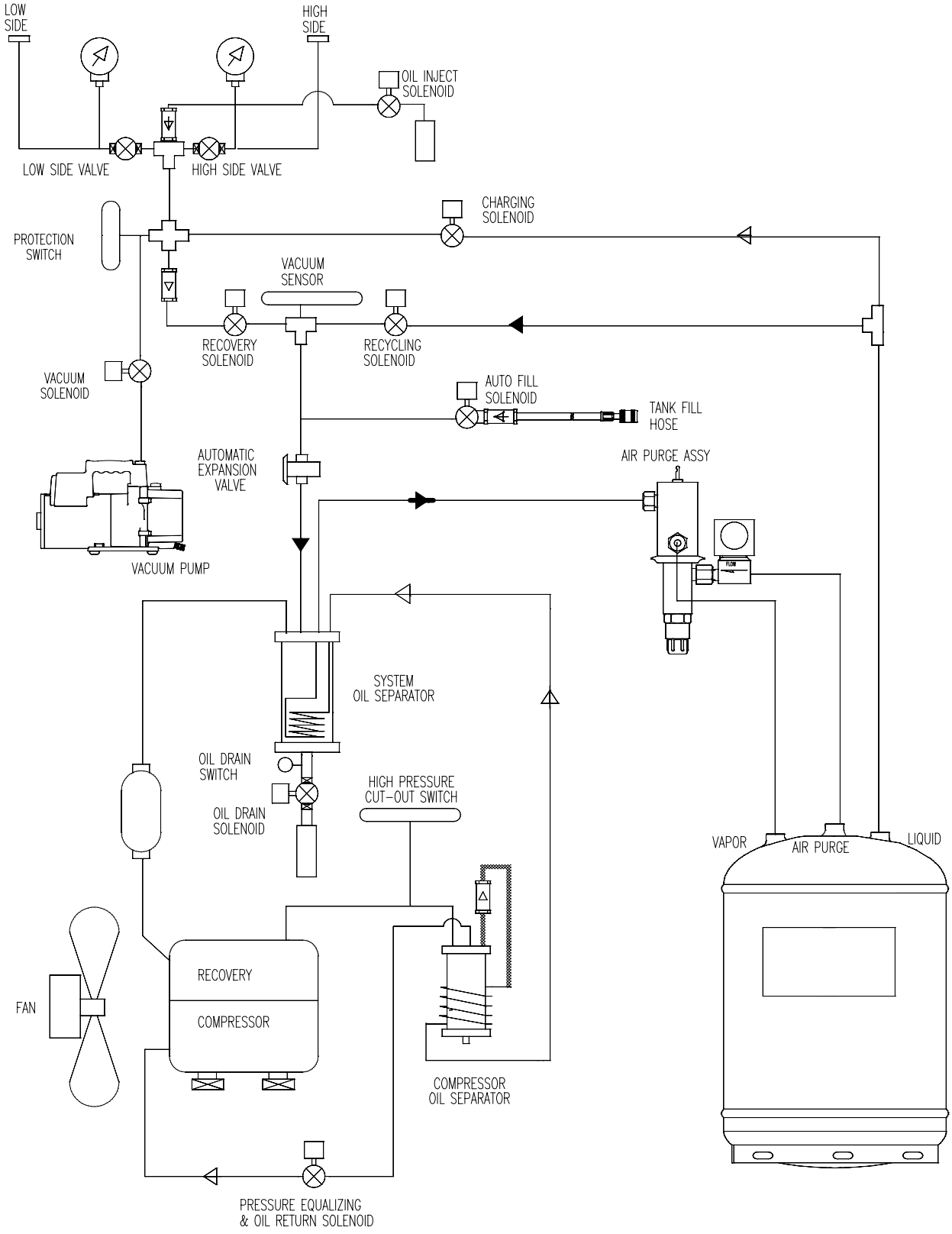


INST 0841

#	34900	34/177002K	Description
1	121277	123626	Tank Hose
2	121277	123624	Tank Hose
3	121277	123626	Tank Hose
4	120887	123620	Inlet line
5	121173	122909	Air purge Inlet
6	120165	120165	Vacuum line
7	121172	121967	Compressor discharge

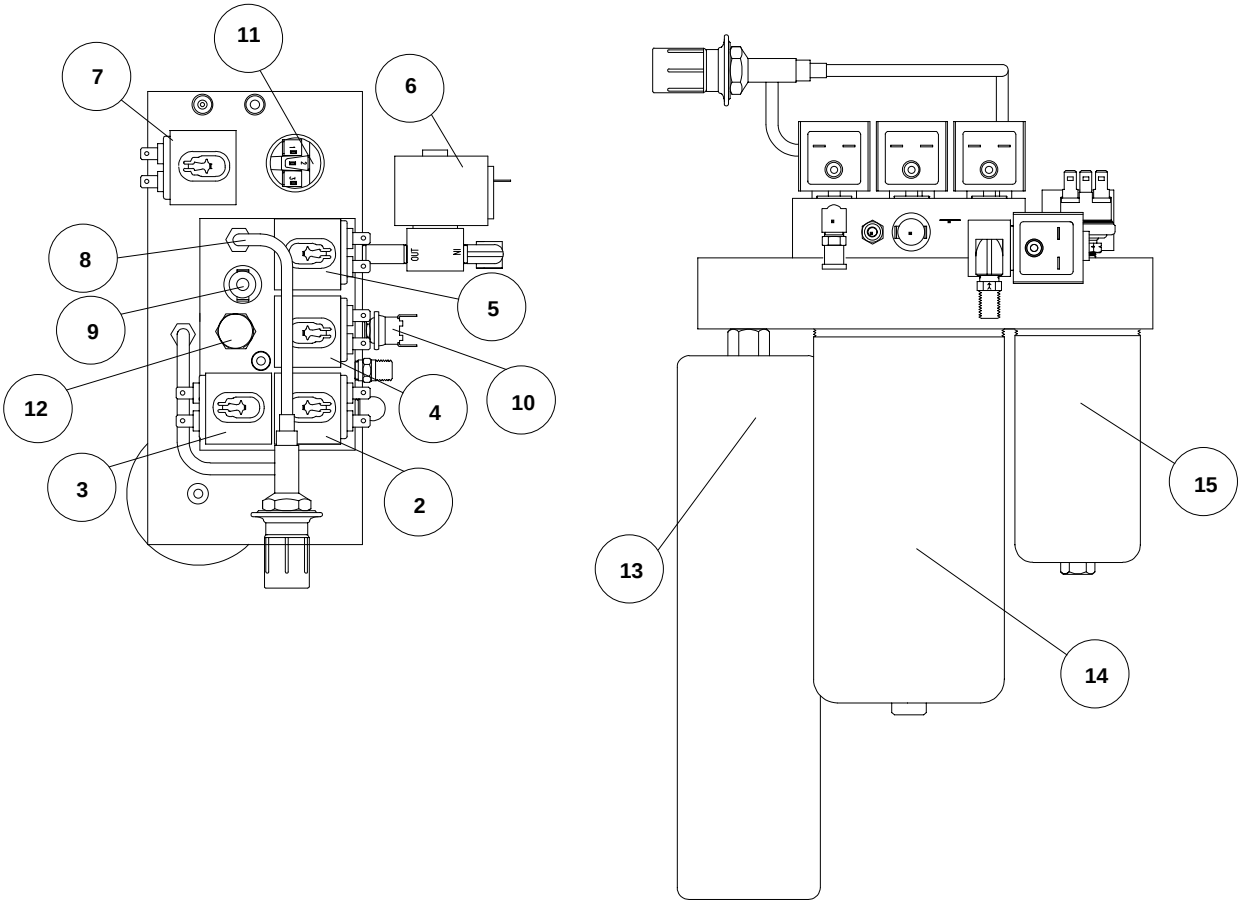
#	34900	34/177002K	Description
8	121169	121968	Compressor suction
9	121171	121966	Compressor Oil Return
10	121314	121969	System Oil Drain
11	120225	120225	Oil Injection Tube
12	121314	121961	Tank Fill Hose
57	120225	N/A	OIl Injection Tube
58	120220	121773	Oil Drain Tube

Flow Diagram
Flow Representaion



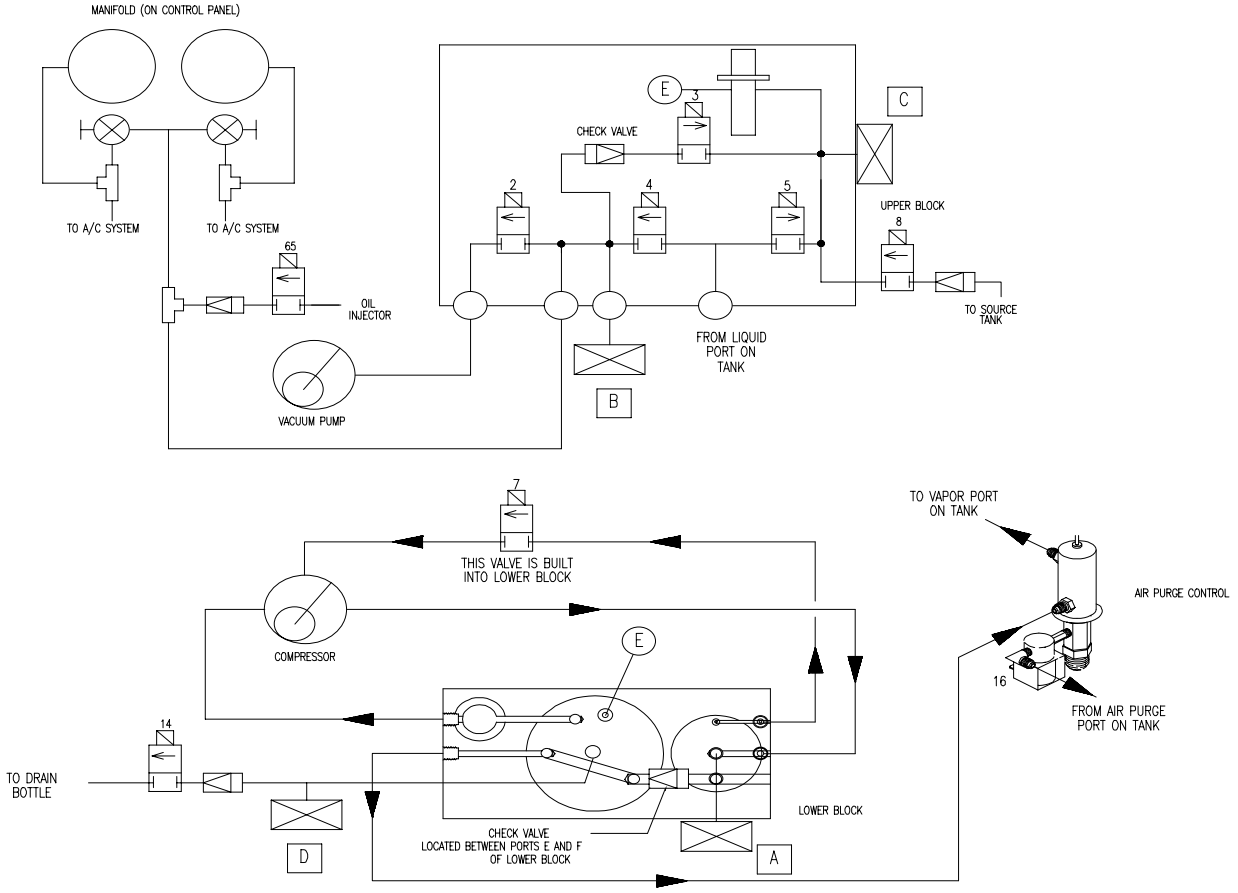
INST 0727

1 RA19624 - Manifold 347002K / 177002K / 34900



INST 0842

Flow Diagram A Block Representation
347002K / 177002K / 34900



SWITCH	DESCRIPTION
A	HIGH PRESSURE SWITCH–MANIFOLD
B	VACUUM PROTECTION SWITCH
C	13" VACUUM SWITCH
D	HIGH PRESSURE SWITCH–OIL DRAIN

		FUNCTION					
SOLENOID	DESCRIPTION	RECOVER	VACUUM	RECYCLE	CHARGE	INJECT	FILL
2	VACUUM	O	X	O	O	O	O
3	RECOVER	X	O	O	O	O	O
4	CHARGE	O	O	O	X	X	O
5	RECYCLE	O	X	X	O	O	O
7	OIL RETURN	O	*	*	O	O	O
8	FILL	O	*	O	O	O	X
14	OIL DRAIN	*	O	O	O	O	O
16	AIR PURGE	O	*	*	O	O	O
65	OIL INJECT	O	O	O	O	X	O

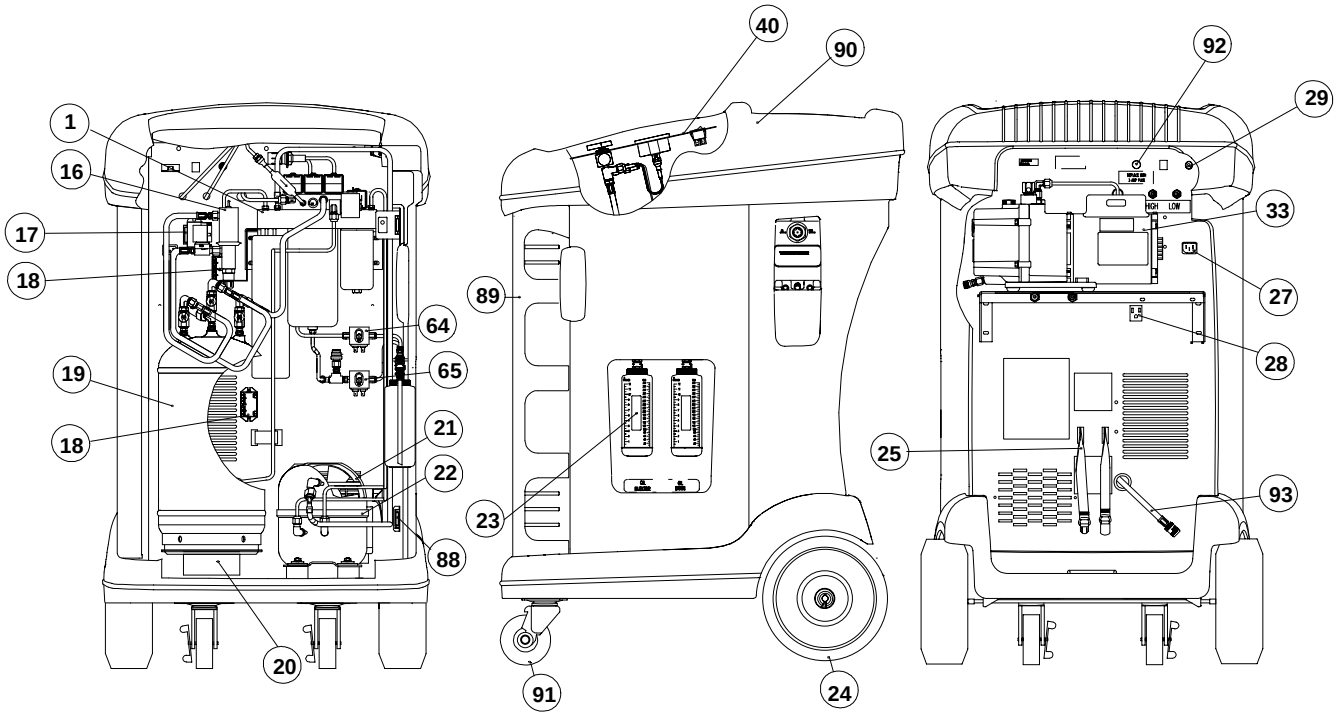
O = OFF

X = ON

* = PERIODICALLY ON

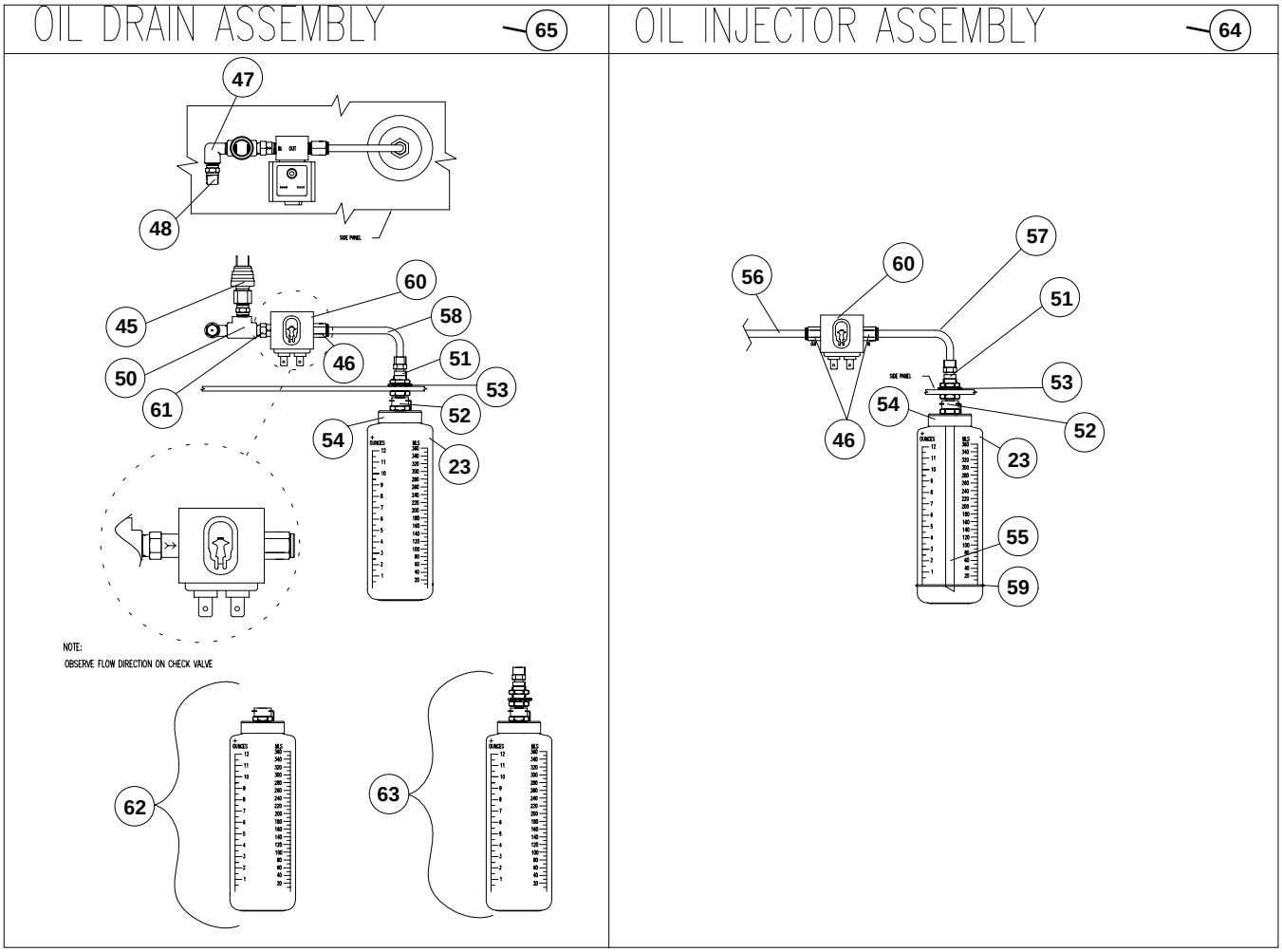
INST 0703

Component Location
34900



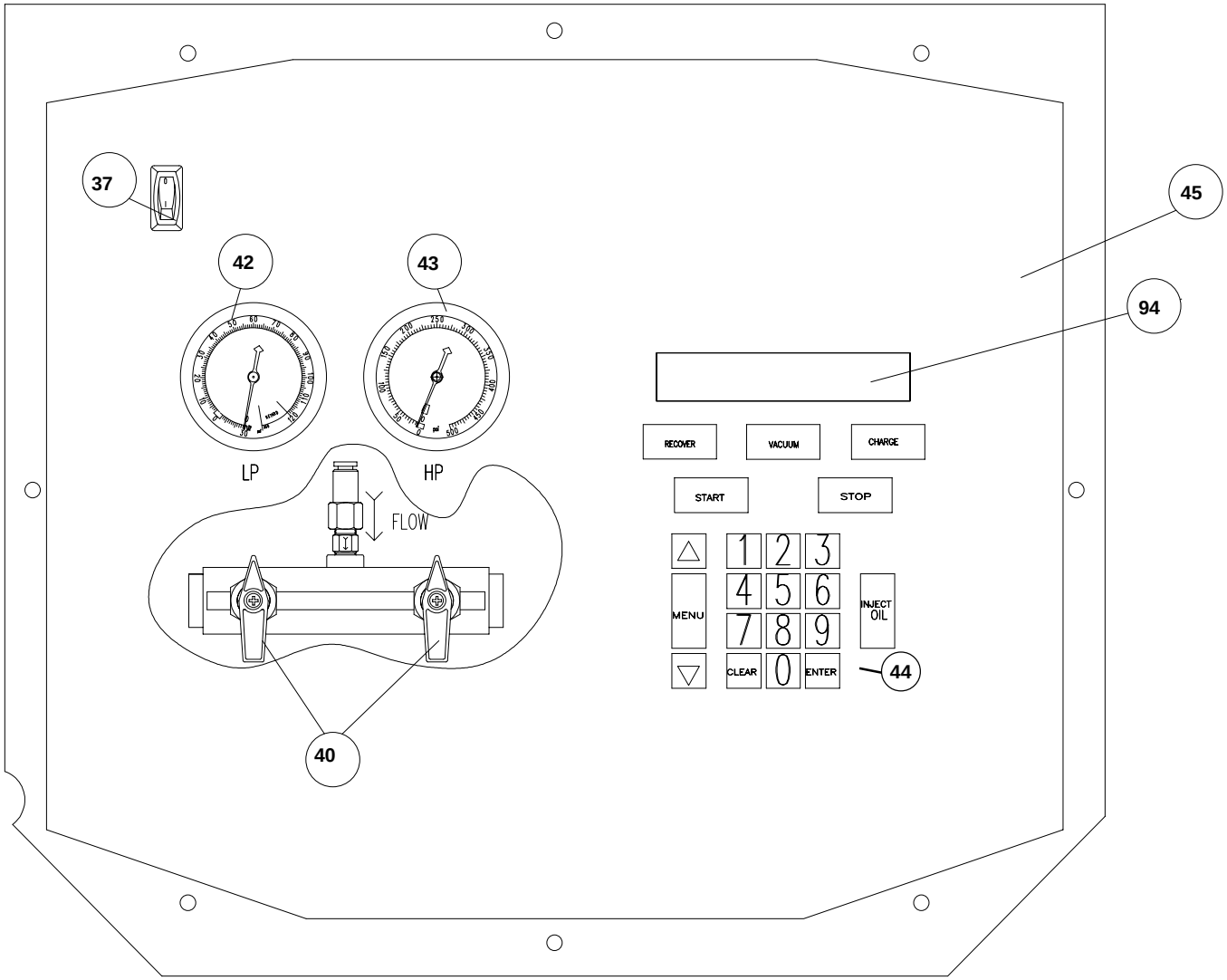
INST 0746

34900



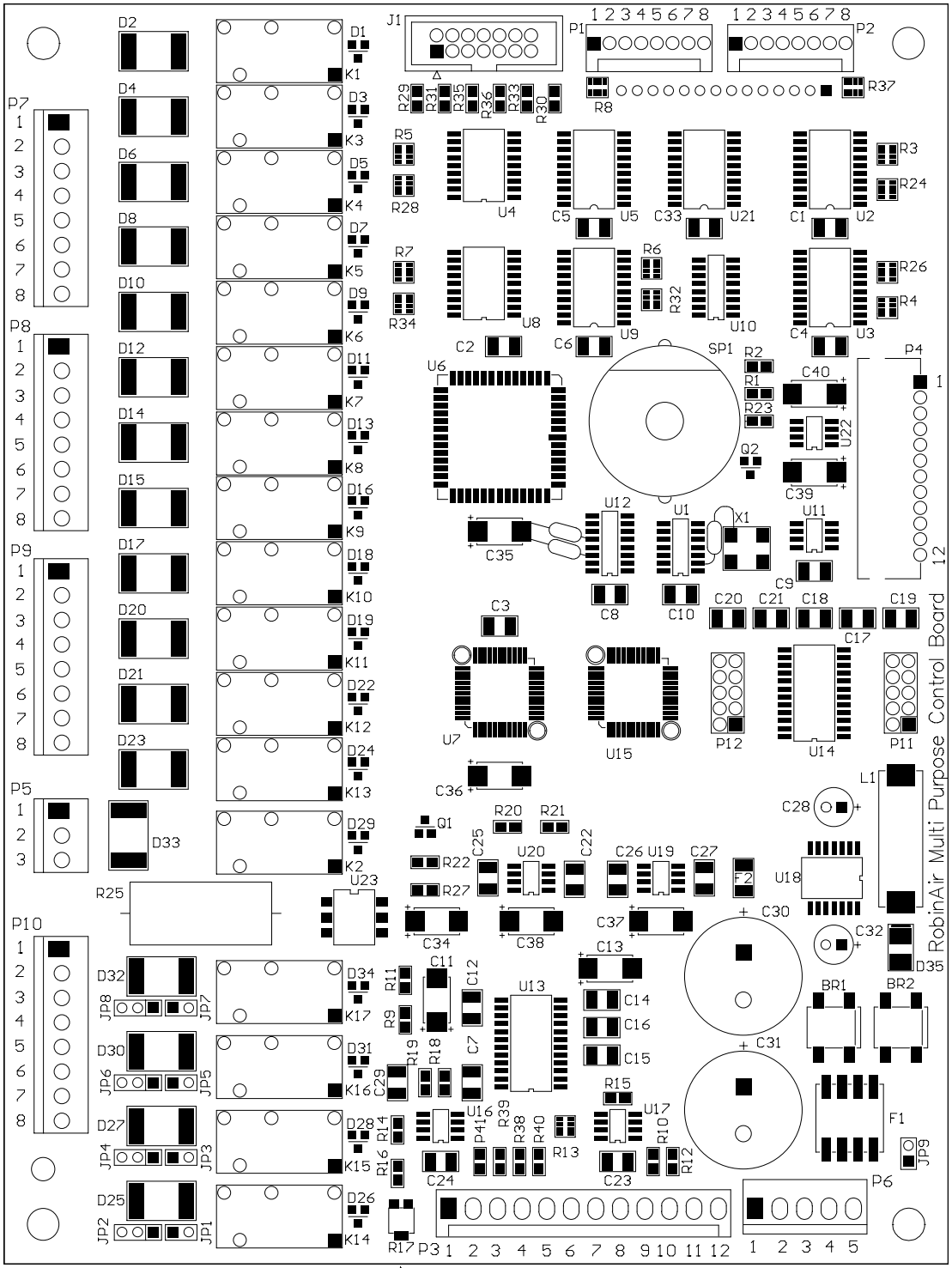
INST 0843

Control Panel Assembly 40
34900



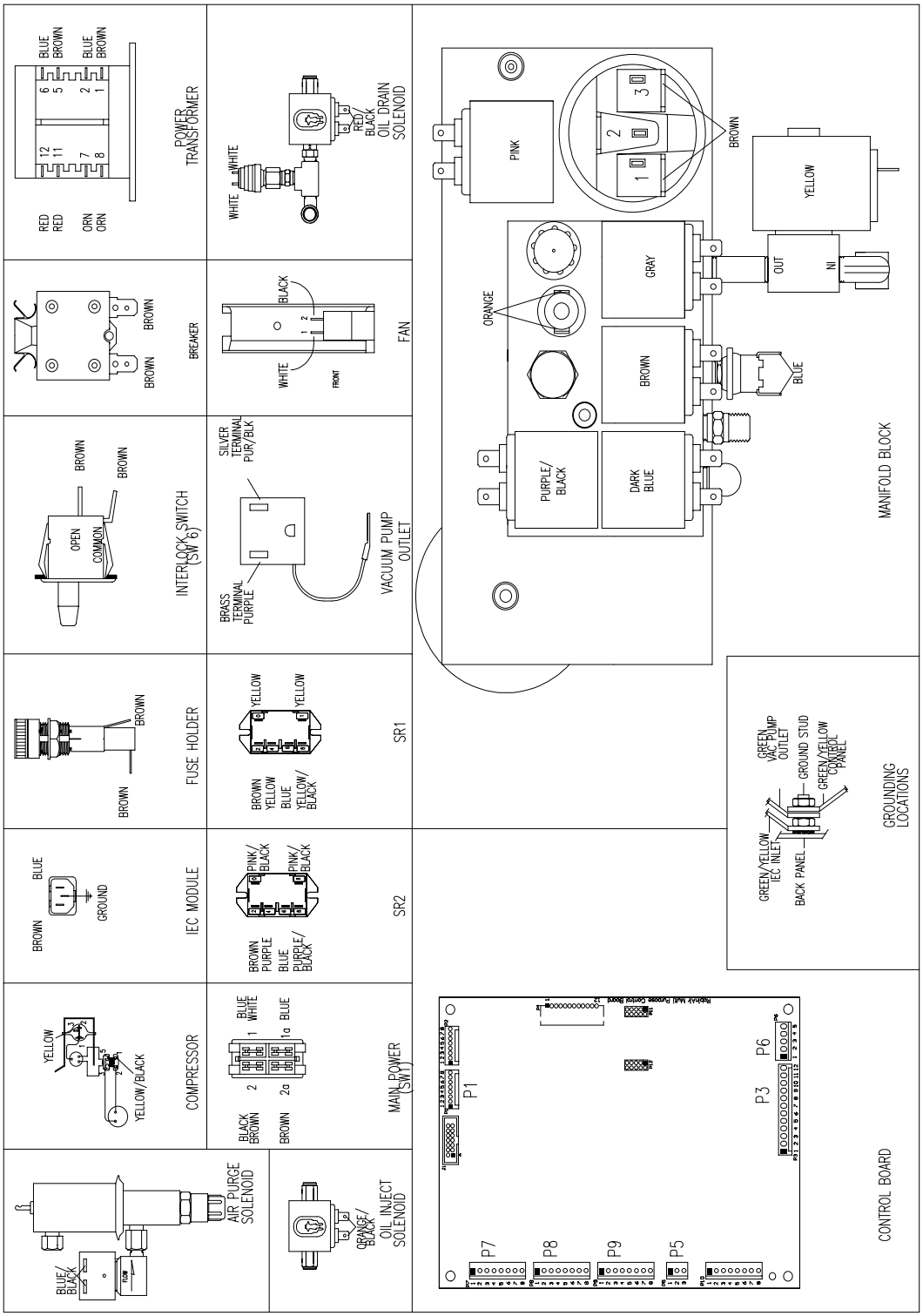
INST 0844

34900
Circuit Board RA19739



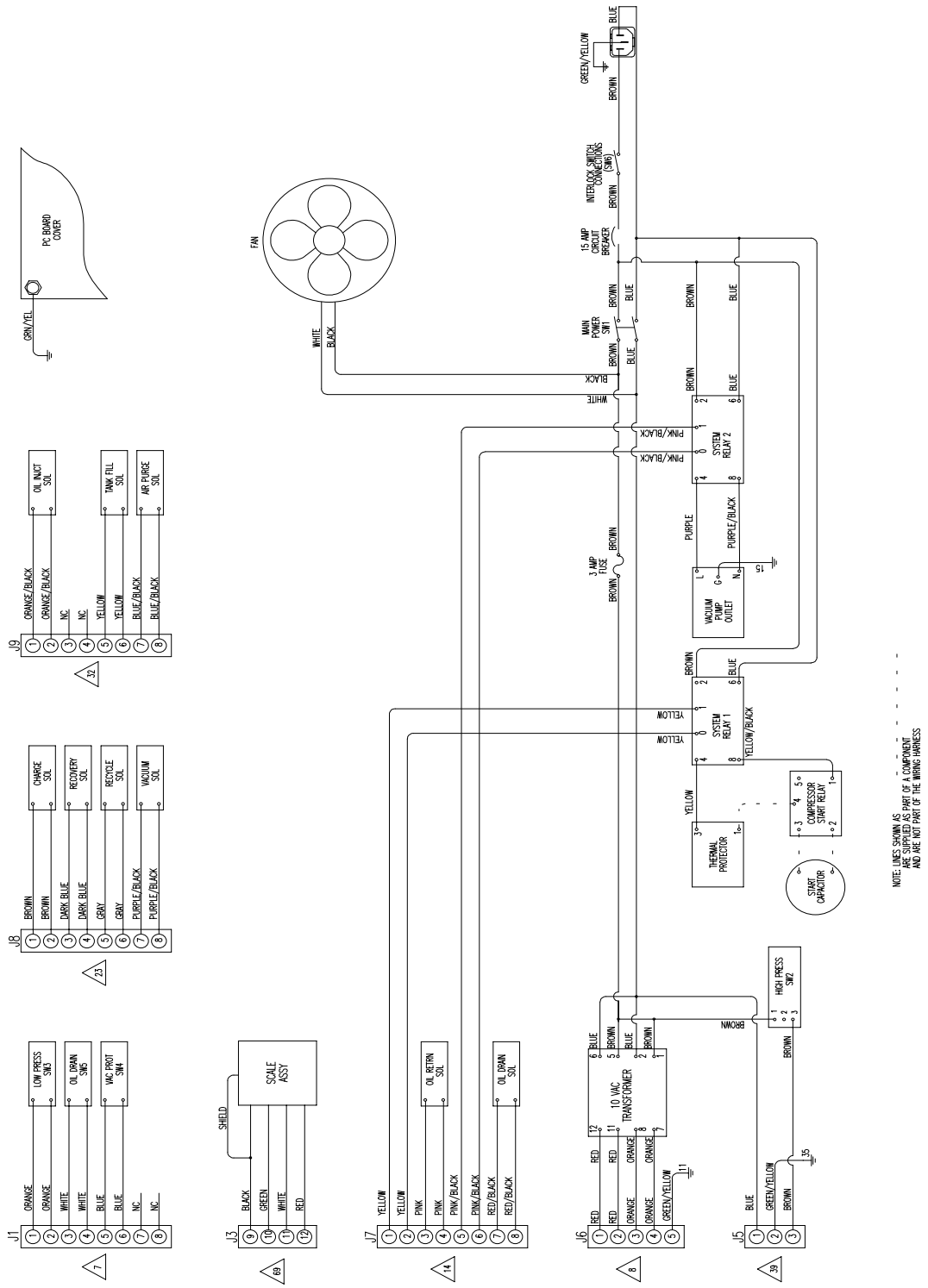
INST 0720

34900



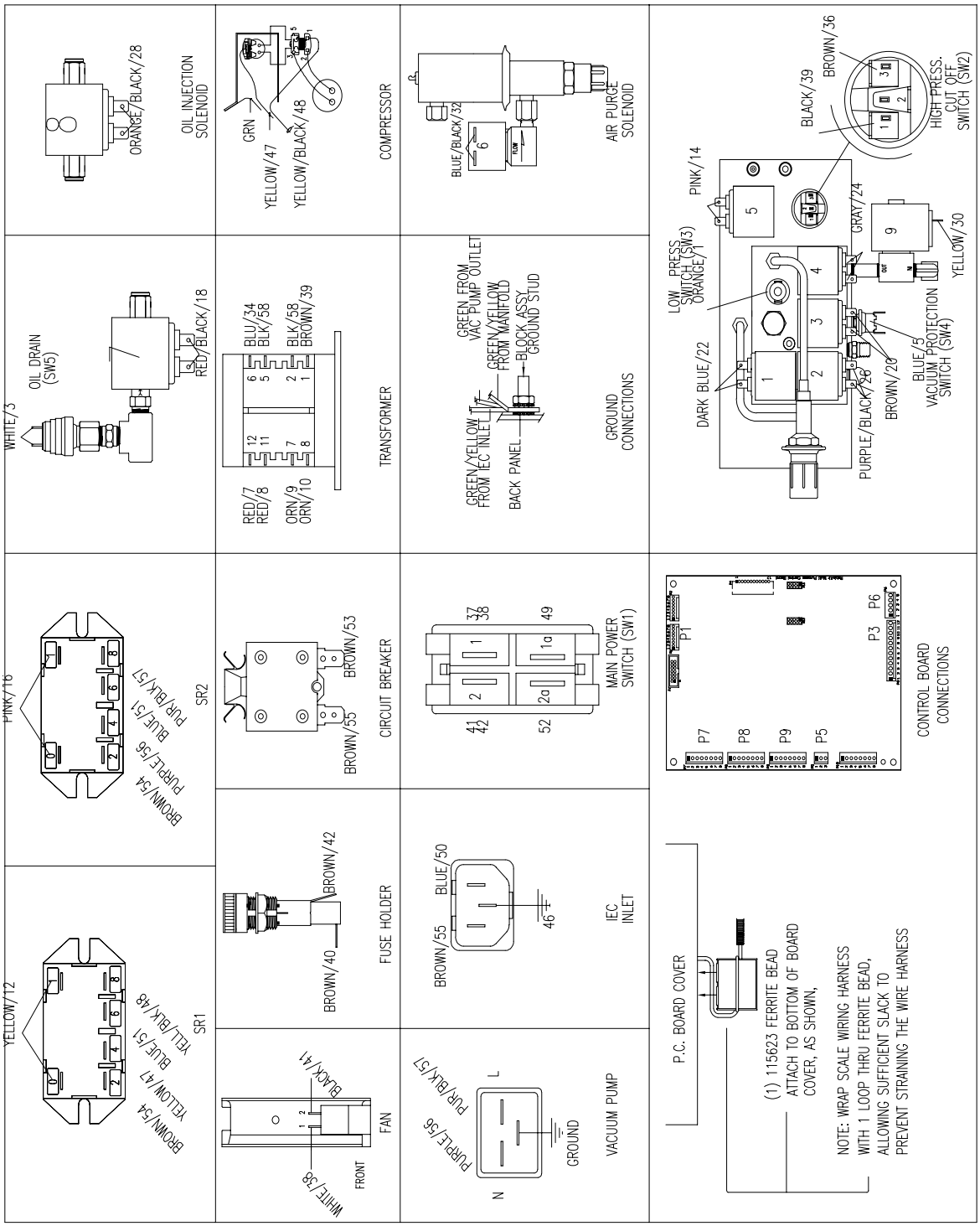
INST 0845

34900

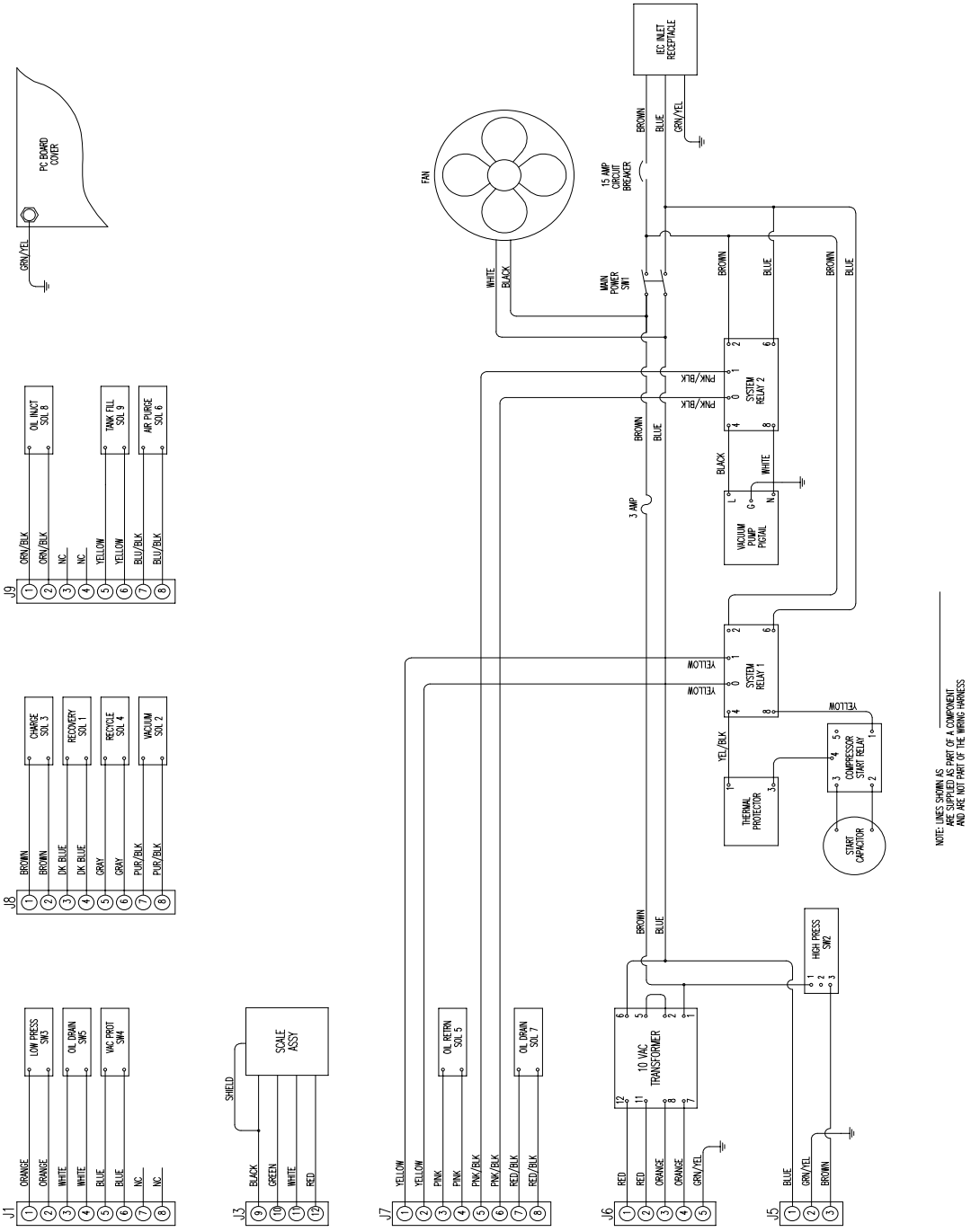


INST 0846

34901


OIL INJECTION SOLENOID
ORANGE/BLACK/28
COMPRESSOR
GRN
YELLOW/47
YELLOW/BLACK/48
AIR PURGE SOLENOID
BLUE/BLACK/32
HIGH PRESS. CUT OFF SWITCH (SW2)
BLACK/39
BROWN/36
LOW PRESS. SWITCH (SW3)
ORANGE/11
PINK/14
GRAY/24
YELLOW/30
OIL DRAIN (SW5)
WHITE/3
RED/BLACK/18
TRANSFORMER
BLU/34
BLK/58
BLK/58
BROWN/39
RED/7
RED/8
ORN/9
ORN/10
GROUND CONNECTIONS
GREEN FROM VAC PUMP OUTLET
GREEN/YELLOW FROM MANIFOLD
BLOCK ASSY. GROUND STUD
GREEN/YELLOW FROM IEC INLET
BACK PANEL
DARK BLUE/22
BLUE/5
VACUUM PROTECTION SWITCH (SW4)
BROWN/20
PURPLE/BLACK/26
SR2
PINK/16
BROWN/54
PURPLE/56
BLUE/51
PUR/BLK/57
CIRCUIT BREAKER
BROWN/53
BROWN/55
MAIN POWER SWITCH (SW1)
37
38
49
1a
2a
41
42
52
CONTROL BOARD CONNECTIONS
P1
P3
P6
P7
P8
P9
P5
SR1
YELLOW/12
BROWN/54
YELLOW/41
BLUE/51
YELL/BLK/48
FUSE HOLDER
BROWN/42
BROWN/40
IEC INLET
BROWN/55
BLUE/50
46
P.C. BOARD COVER
(1) 115623 FERRITE BEAD ATTACH TO BOTTOM OF BOARD COVER, AS SHOWN,
NOTE: WRAP SCALE WIRING HARNESS WITH 1 LOOP THRU FERRITE BEAD, ALLOWING SUFFICIENT SLACK TO PREVENT STRAINING THE WIRE HARNESS
FAN
BLACK/41
WHITE/38
FRONT
VACUUM PUMP
PUR/BLK/57
PURPLE/56
L
N
GROUND

34901



INST 0851

177002K Circuit Board and Key Pad Functions

Recover – Initializes the recovery process.
Vacuum – Initializes the vacuum process.
Charge – Initializes the charging process.
Start – Starts a process after if has been initialized, or paused.
Stop – Stop or pauses a process after it has been started.
Inject Oil – When pressed and held will energized the oil injection solenoid.
Menu - When pressed will allow you to scroll through different options by using the blue up and down arrow buttons, to access one of the follow push start, to activate unless stated otherwise, then to lock the option in you will push stop.

Change Filter – Sets the unit to run in the filter change mode
Recycle – Set the unit to run in the recycle mode.
Tank Fill – Sets the unit to run in the tank fill process, will automatically stop when 15-lbs of chargeable weight is in the ISV.
Vacuum Pump Hours – Shows how many hours are on the pump oil. After oil has been changed you will need to "0" the timer by pushing the clear button,
Dryer Recovered Hours – Displays the amount of refrigerant that has been recovered through the filter drier. After oil has been changed you will need to "0" the timer by pushing the clear button.
Advanced/Basic Prompts – Allows you to choose from very little on screen help (basic), to full on screen help, telling you when to connect and disconnect hoses, what buttons to push and so on.
Auto Restart – If activated (turned on) unit will watch for a pressure rise during the five-minute waiting period. If pressure is detected the unit will restart recover; it will continue doing this until there is no pressure rise detected.
Units (weight) – Will allow you to choose between English & Metric units.
Language – Allows the display to read in English, Spanish, French or German.
Change Defaults – Accessed by entering 8, 7, 8, 7 then enter. Then you will gain access to the following options.

Calibrate Scale – Follow the on-screen prompts to re-calibrate scales.
Set Tank Tare – Should always say 17.40-lbs.
Step Test – Allows the unit outputs to be tested for operation. The screen will display which component is being energized.
Key Pad Test – Will run the operator through an operation where every button on the keypad will be tested.
Set Charge Offset – Usually set at "0" unless extremely long hoses are being used and then the amount of refrigerant left in hoses will have to be calculated.
Download Program – Factory use only.
UL Trip Point – Apply 43-lbs to scale assembly and adjust the p-1 pot so the display reads set. Remove 1-lb and set should go to clear.
Prepare Board Test – Board house use only.
Prepare To Ship – Resets board memory.

Installation Routine – Will allow you to set the unit up as if it was new, with pulling a vacuum on the ISV.

Troubleshooting

WILL NOT RECOVER:

Compressor runs:

1. If the unit is being run through an extension cord, eliminate its use.
2. Disconnect 96” service hoses from vehicle. Open the manifold valve on control panel then push recover. If the pressure on the gauges drop while in the clear mode, check for voltage at the recovery solenoid. If voltage is present replaced main board. If voltage is not present rebuild the recovery solenoid.
3. Remove the oil drain bottle and check to if it is pulling air in through the oil drain port. If air is being pulled in through the oil drain port, check for voltage at the oil drain solenoid. If voltage is present, change the board. If voltage is not present, rebuild oil drain solenoid.
4. Connect gauge to the compressor service port. Start recovery process, it should start in clearing, watch pressures on gauge, if it reaches 15”(-. 51 bar) and the unit does not go to recovery test the vacuum sensor for continuity. If the switch has continuity then it is stuck in the close position replaced switch. (See part #9 for description)
5. If the vacuum switch does not reach a 15” (-. 51 bar) close liquid valve on ISV if the gauge then pulls down and switches over to recover, check the recycling solenoid for voltage. If voltage is present, replace board. If voltage is not present rebuild recycling solenoid.
6. Inspect the filter for flow obstructions and check for leaks around the gasket area.
7. Verify that the equalization solenoid is not receiving power. ***NOTE:*** The equalization solenoid is a normally closed solenoid. If it is receiving power, check for proper wire connection and proper board installation. If the wires are connected to their corresponding pins, replace the main board.
8. Check the equalization solenoid for bleed through to the suction side of the compressor. Rebuild the solenoid if it is bleeding through.

   Check the compressor suction and discharge pressures (see page 15). Replace the compressor as necessary.

Compressor does not run:

1. If the unit is being run through an extension cord, eliminate its use.
2. If the display does not respond to keypad commands, verify that the keypad is plugged in.
3. If there is still no response, replace the keypad. If the keypad is functioning properly, you will hear a tone when you press a key.
4. If the keypad is functioning properly, remove the shroud and verify proper wire harness connections.
5. Check for 110 volts to the coil of the compressor relay (pins 0 & 1). If there is no voltage, check the wires from the main board to the compressor relay for continuity. If they have continuity, replace the main board.
6. If the compressor relay is receiving 110 volts to the coil, check for voltage from the #4 contact of the relay to the ground. If there is poor compressor voltage, replace the relay.
7. If voltage is present at the compressor, jumper the thermals overload. If the compressor runs, check the compressor amp draw. If it is drawing higher than 6 amps or not running, replace the compressor. If the compressor is cool and drawing low amperage, replace the thermal overload.

Display Reads FULL:

1. Check the tank weight and replace the tank if it is full.
2. Check scale calibration and recalibrate if necessary.
3. Adjust the UL circuit, by adjusting the P1-pot located on the circuit board.
4. Replace the scale if previous attempts failed.
5. Replace the main board if replacing the scale does not correct the problem.

Troubleshooting

Display Reads HIGH PRESSURE:

1. Check to be sure both tank valves are open, and the hoses are accessing the tank.
2. Check the tank pressure. If the pressure exceeds 435-psi (30 bar), release the pressure down to 200-psi (14 bar) through the vapor port. Then do a manual recycle.
3. Check the 15-amp circuit breaker on back of the back of the unit, by pressing the white button and making sure that it is latched in.
4. If the breaker is latched in the check it for continuity and If the continuity is not present then replace breaker.
5. Check the high-pressure cutout for continuity between pins 1 & 3. If pins have continuity, verify proper wire connections and replace main board if necessary. If pins 1 & 2 have continuity, there is an obstruction in the discharge line or the high-pressure switch is bad. If there is no continuity between any pins, replace the high-pressure switch.
6. Inspect the discharge check valve for obstructions and verify that the discharge line is clear.

Display Reads SCALE OR CAL:

1. Remove all weight from the scale platform.
2. Check the scale cable to be sure it is properly connected to the main board.
3. Check the scale calibration and recalibrate if necessary.
4. Replace the scale if previous attempts failed.

   Replace the main board if replacing the scale does not correct the problem.

Display Reads CH-F:

1. The CH-F message means the filter has had the maximum amount of refrigerant ran through the filter, and it is time to change the filter.
2. After the filter if the CH-F message remains on the display, replace the main board.

Display Reads CH-P:

If there is less than 25-psi (1.7 bar) at the inlet, check the vacuum pump protection switch has continuity, press HOLD/CONT to continue recovery. If after pressing the hold/cont. button the unit does not continue the recovery process, test the keypad for proper function. If the keypad has proper function, replace the main board.

If there is more than 25-psi (1.7 bar) at the inlet, check the vacuum pump protection switch for continuity, and if it has none, replace it. If the vacuum pump protection switch does have continuity, check the wires for proper connection to the main board and replace either component if necessary.

UNIT WILL NOT EVACUATE:

Vacuum pump runs:

1. If the unit is being run through an extension cord, eliminate its use.
2. Verify that the manifold gauge valves are open.
3. Check the low side gauge for proper operation and calibration.
4. Be sure the plastic vacuum line is snug at both ends and not obstructed. Check the pneumatic fittings for leaks.
5. Check for proper vacuum oil level in the vacuum pump sight glass (oil level should be in the center of the sight glass while the pump is running). Replace vacuum pump oil if necessary.
6. Check for suction at the intake of the pump. If there is none, replace the pump.
7. Remove the shroud and look for loose wires to the vacuum solenoid.
8. Check for voltage to the vacuum solenoid. If 110 volts are present, rebuild the solenoid. If 110 volts are not present, check the wires for proper connection and continuity. If the wires have continuity, replace the main board.

Troubleshooting

UNIT WILL NOT EVACUATE (Continued):

Display reads U-HI:

1. If there is more than 25-psi (1.7 bar) at the in let, recover before evacuating. If pressure on the gauges raised above 0" hg after recovery is completed replace the inlet check valve.
2. If there is less than 25-psi (1.7 bar) at the inlet, check the vacuum pump protection switch for continuity, If the switch has continuity, replace it. If the switch does not have continuity, check the wire harness and replace if necessary.
3. If U-HI remains on the display, replace the main board.

Vacuum pump does not run:

1. If the unit is being run through an extension cord, eliminate its use.
2. Verify that the pump is plugged in.
3. Check the voltage at the pump receptacle. If proper voltage is present, be sure that the pump is not overfilled with oil (if it is drain the pump, start and properly refill the pump). If proper voltage is present and the pump still will not start, replace the pump. If proper voltage is not present, remove the shroud and inspect the wiring for proper connections.
4. Check for 110 volts to the coil of the vacuum pump relay (pins 0 & 1). If there is no voltage, check the wires between the vacuum pump relay and the main board for continuity. If the wires have continuity, replace the main board. If there is voltage at the vacuum pump relay coil, replace the relay.
5. If the vacuum pump relay is energized (receiving 110-volts), check for voltage from the #4 contact to the ground with a voltmeter. If there is poor voltage, replace the vacuum pump relay.

WILL NOT RECYCLE:

RECYCLE prompt is on:

1. Check that all tank hoses are properly installed and the tank valves are completely open.
2. Verify that there is a minimum of 10 pounds (4.5 kilograms) of refrigerant in the tank.
3. Verify that the oil drain solenoid in not allowing the unit to pull air in through the oil drain tube.
4. Install the low side of a manifold gauge set to the compressor service port to verify that the expansion valve is set at 35-psi (2.4 bar). Adjust the expansion valve if necessary.
5. If the low side of the unit is in a vacuum, and the expansion valve does not adjust to allow flow, replace the expansion valve.
6. Check the filter for flow obstructions.
7. Verify that the equalization solenoid is not receiving power. If the equalization solenoid is voltage, check the solenoid for internal bleed through. Repair if necessary.
8. If the compressor is not running, verify that voltage is being supplied to the compressor. If it is not receiving voltage, check the wiring and the compressor relay for proper operation.
9. If the compressor is receiving voltage, but is not running, inspect the compressor start components and check the amp draw. Replace the compressor as necessary.
10. If the compressor is running, check the compressor suction and discharge pressures as well as the oil level.

Troubleshooting

WILL NOT RECYCLE (Continued):

RECYCLE prompt is off:

1. Check that all tank hoses are properly installed and the tank valves are completely open.
2. Verify that there is a minimum of 10 pounds (4.5 kilograms) of refrigerant in the tank.
3. Install the low side of a manifold gauge set to the service port located at the oil drain.
4. If positive pressure is present at the service port, compressor service port look for loose wires to the vacuum sensor. If the wires are not loose, check for continuity on the vacuum sensor. If there is no continuity, replace the vacuum sensor. If there is continuity at the sensor, inspect the wires between the main board and the vacuum sensor, and replace if necessary. If the wires are good, replace the main board.
5. If a vacuum is present at the compressor service port, verify that 110 volts are being sent to the recycling solenoid. If there is no voltage, inspect the wires for continuity. Replace the main board if the wires have continuity.
6. Even though the recycling solenoid is receiving 110 volts it may not be opening. Rebuild the solenoid or replace the coil if necessary.
7. If there is still a vacuum in the low side of the unit, replace the expansion valve.

WILL NOT PERFORM AN AIR PURGE:

NOTE: The air purge solenoid does not receive power

NOTE: For the first 30 seconds of recycling, and will only receive voltage for a maximum of 10 minutes.

1. Verify that the recovery tank has excess air pressure in it. Check the pressure in the tank in relationship to the temperature of the refrigerant. The air purge device requires at least 7-psi (.48 bar) of excess pressure to open.
2. If excess air pressure is confirmed, verify that all tank hoses are properly connected to the tank.
3. If the hoses are connected correctly check and make sure that there is flow coming out of the unit air purge port on the ISV.
4. If this is all correct the check to make sure that the hole in the cap on the bottom of the air purge is not plugged.
5. Start the unit in the recycling process. While recycling for at least three minutes, verify that 110 volts are being supplied the air purge solenoid. If it is not getting 110 volts, inspect the wires for continuity. Repair or replace as necessary. If the wires have continuity, replace the main board.
6. If the solenoid is receiving 110-volts, rebuild the solenoid or replace the coil if necessary.
7. If the air purge solenoid is operating properly,

Troubleshooting

replace the air purge device.

WILL NOT PERFORM AN AIR PURGE (Continued):

WILL NOT CHARGE:

NOTE: There is no component that "pumps" refrigerant into a system during the charge process. The refrigerant flows in by a pressure transfer. If the system is not in a vacuum, this unit will not charge.

1. If the unit is being run through an extension cord, eliminate its use.
2. Check that all tank hoses are properly installed and the tank valves are completely open.
3. Verify that the manifold valves are completely open and unobstructed.
4. If CHECK REFRIGERANT is on the display, verify that there is a minimum of 10 pounds (4.5 kilograms) of refrigerant in the tank. If there is enough refrigerant in the tank check scale calibration and recalibrate.
5. Verify that the main board has accepted the programmed amount. Test the operation of the keypad; replace if necessary.
6. Be sure the scale is unobstructed.
7. Check for 110 volts to the charging solenoid. If there is no voltage, check the wires for continuity. If the wires have continuity, replace the main board. If there is proper voltage to the solenoid, rebuild the solenoid, or replace the coil if necessary.
8. If everything else passes then replace the scale or main board.
9. If a partial charge occurs, close the high side valve, start the vehicle and pull in the remaining charge on the low side of the system. When the remaining charge has been pulled from the tank, the charging solenoid should close, preventing a possible overcharge.

Function Test

NOTE: The recovery tank must have at least 10 pounds of refrigerant in it to perform this test.

1. Turn on the Main Power switch.
2. Pressurize the high and low side hoses with refrigerant.
3. Install a gauge to the compressor service port.
4. Verify that all tank hoses are properly attached to the recovery tank.
5. Open all tank valves.
6. Press RECOVER. The compressor will start, the display will read CL-L and the low side gauge will pull into a 13" (-. 44 bar) vacuum. *NOTE:* The system gauges should not lose pressure during CL-L.
7. Upon reaching a 13" (-. 44 bar) vacuum, the recovery solenoid will automatically open and the test gauge should re-ressurize. The compressor will now pull system gauges into a 13" (-. 44 bar) vacuum and the unit should shut off.
8. The test gauge will build positive pressure and a pressure transfer should be heard. This is the result of the equalization solenoid opening for twenty seconds and returning oil to the compressor. If no pressure rise occurs, the equalization solenoid must be inspected for obstructions and/or voltage.
9. Press VACUUM**.** The vacuum pump will start, VACUUM will appear on the display and the timer will begin to count down from 15.00 minutes.
10. After 6 seconds the compressor, recycling solenoid and vacuum solenoid will energize. The control panel gauges will pull into a deep vacuum and the unit will begin recycling refrigerant. RECYCLE will appear on the display.
11. After 30 seconds the air purge solenoid will receive 110 volts and open, but will only receive this voltage for 10 minutes. Once the air purge solenoid is open, pressure from the tank enters the air purge device. If the pressure from the tank is 7-psi (.48 bar) greater than the reference bulb, the air purge device will open and purge this pressure down to a 3-psi (.21 bar) difference.
12. After 5 minutes, the low side gauge on the unit's control panel will be close to a 30" (-1 bar) vacuum.
13. After 10 minutes, the gauge on the compressor service port should read 30 to 40-psi (2.1 to 2.8 bar). Adjust the expansion valve to comply if necessary.
14. Leak test all internal and external lines and fittings while the unit finishes recycling.
15. After 15 minutes, the vacuum procedure shuts oft automatically, and the display reads CPL.
16. The low side manifold gauge on the control panel should hold a vacuum.
17. Calibrate scale.
18. Calibrate UL circuit.
19. Press charge button to enter into the program charge screen.
20. Press charge, then charging solenoid will energize until the programmed weight is removed from the scale.
21. Program a .20 pound (.10 kilogram) charge into the main board then press start.
22. Recover the remaining pressure from the high and low side hoses.

LABOR RATES

Robinair authorizes a 1¼ hour charge to troubleshoot, leak test and complete a full function test on units that are covered under factory warranty. The authorized time for parts replacement is 15 minutes per part. If repairs are estimated to exceed two hours, prior authorization from Robinair is required.

NOTE: Robinair considers filters and fuses to be a consumable item and they are not covered under warranty. This includes parts and labor.